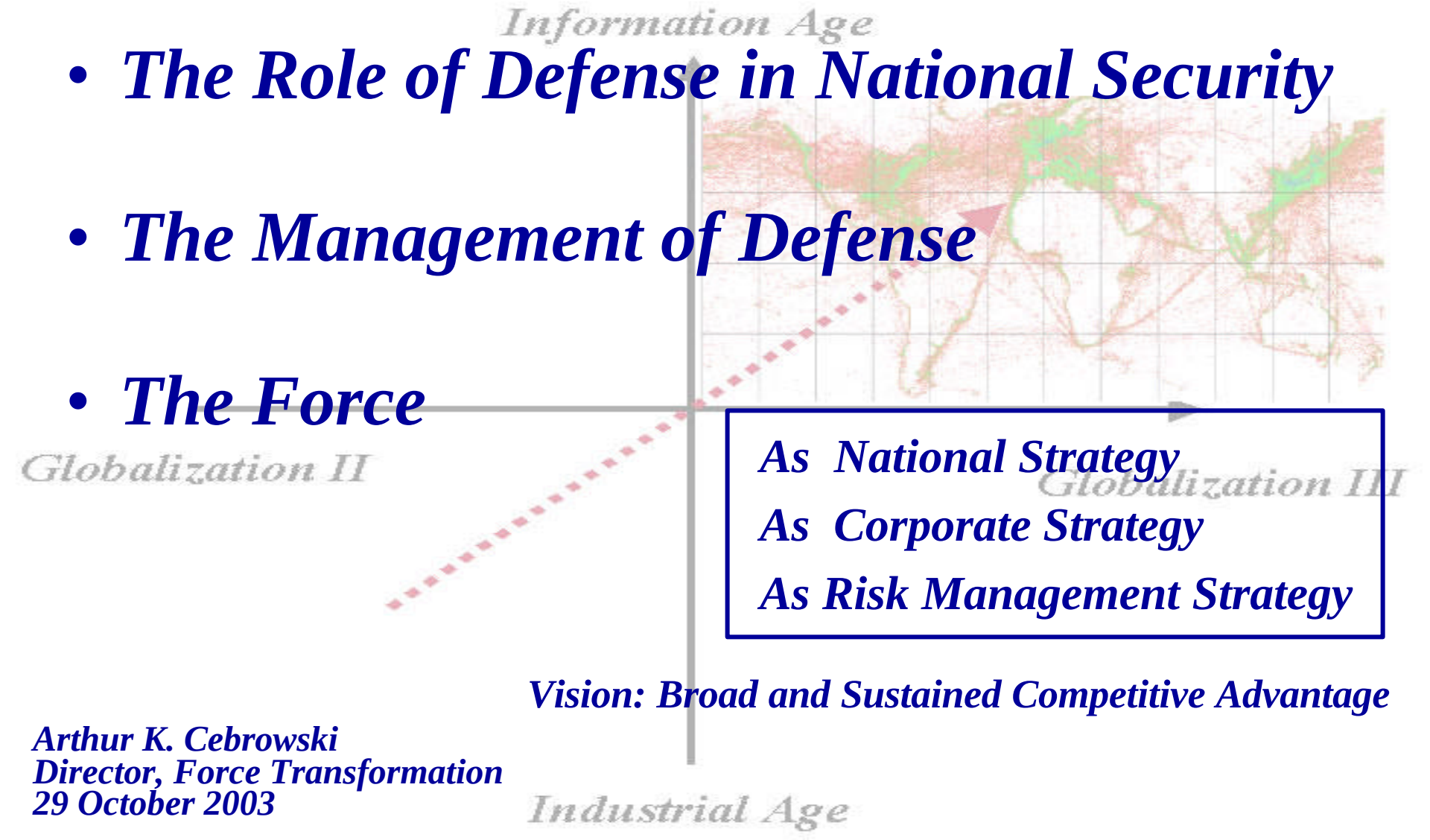
Transforming Defense

Office of Force Transformation



- ***The Role of Defense in National Security***
- ***The Management of Defense***
- ***The Force***

As National Strategy
As Corporate Strategy
As Risk Management Strategy

Vision: Broad and Sustained Competitive Advantage

Arthur K. Cebrowski
Director, Force Transformation
29 October 2003

Transforming Defense

…Working definition

Elements of Transformation

- ☑ Continuing process
- ☑ Creating/anticipating the future
- ☑ Co-evolution of concepts, processes, organizations, and technology
- ☑ New competitive areas/competencies;revalued attributes
- ☑ Fundamental shifts in underlying principles
- ☑ New sources of power
- ☑ Broadened capabilities base

- *New Strategic Context*
- *Broadened Threat Context*
- *Technological Threats Facilitated by Falling Barriers to Competition*

Vision: ***Broad and sustained competitive advantage***

Transforming Defense

…Compelling need

- **New strategic context**
  - ***New Theory of War based on information age principles and phenomena***
  - ***New relationship between operations abroad and homeland security***
  - ***New concept/sense of security in the American citizen***
- **Broadened threat context**
  - ***State/Non-State***
  - ***Nodal/Non-nodal***
  - ***Symmetric/Asymmetric***
  - ***Traditional/Unrestricted***
- **New technological threats facilitated by the falling barriers to competitive entry**
  - ***Immediate accessibility to highly capable low cost IT***
  - ***Opens key operational domains to competition: space, sea, cyberspace***

To the extent we do not transform, we are at risk

Transforming Defense

…Elements of strategy

- **Transform from Industrial Age to the Information Age**
  - ***Implement Network Centric Operations***
- **Ensure sustained competitive advantage**
  - ***Assure Allies***
  - ***Dissuade competitive entry***
  - ***Underwrite deterrence***
  - ***Implement countervailing strategies***
- **Broaden the capabilities base**
  - ***Operational, Technical, Industrial***
  - ***Create new competitive areas***
  - ***Revalue competitive attributes for the information age***
  - ***Decrease capabilities cycle time***
- **Leverage advantages and opportunities**
  - ***Manage the devolution of "sunset" capabilities and processes***

Achieve Speed and Agility vice Optimization

Within the next 10 years, some adversaries will likely have the ability to use long-range precision strike weapons such as ballistic and cruise missiles to deny our use of fixed military infrastructure, such as ports, airfields, and logistical sites.

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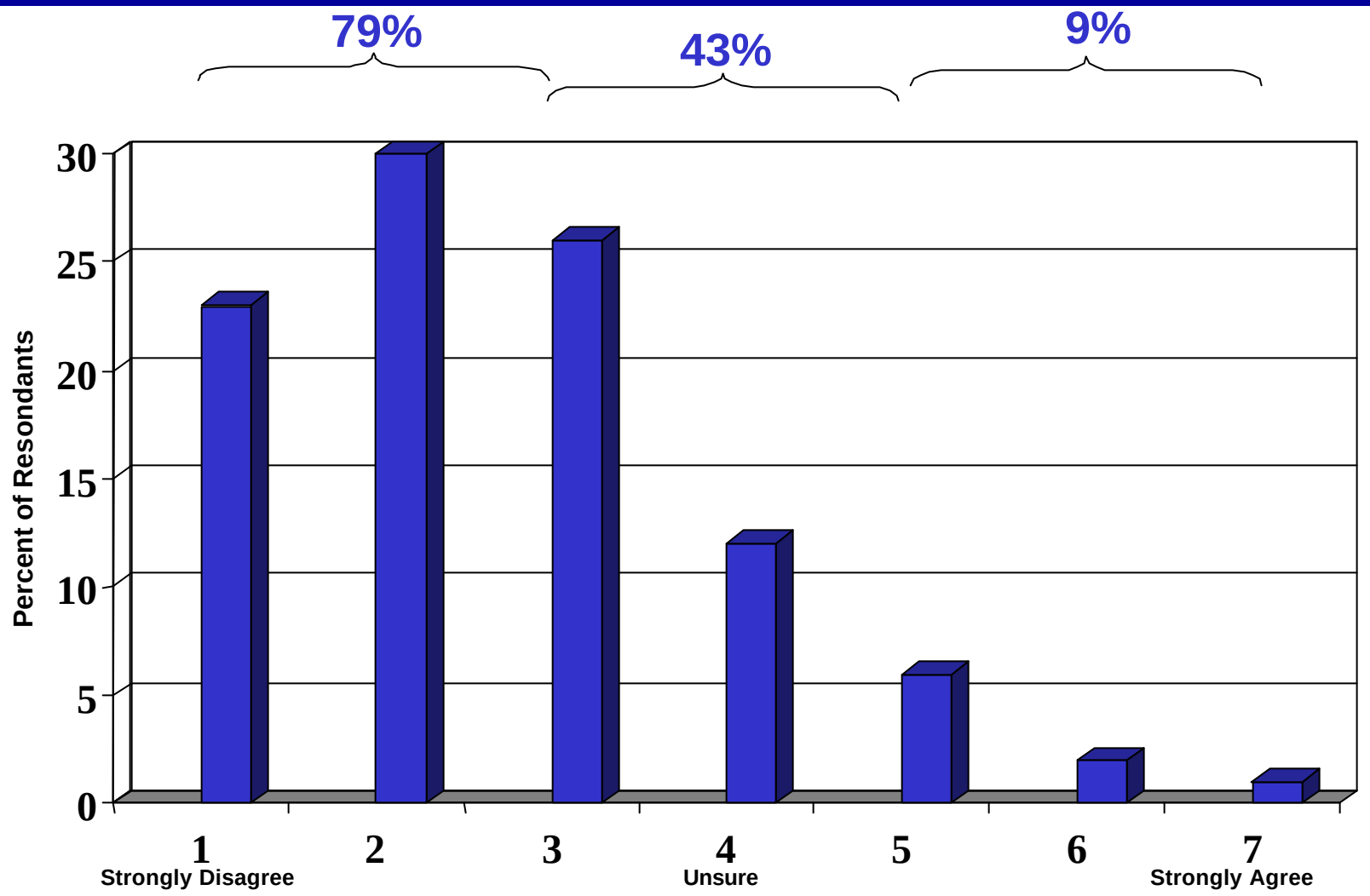

"The Limits of Transformation: Officer Attitudes toward the RMA," Tom Mahnken and James Fitzsimmons NWC, 2003

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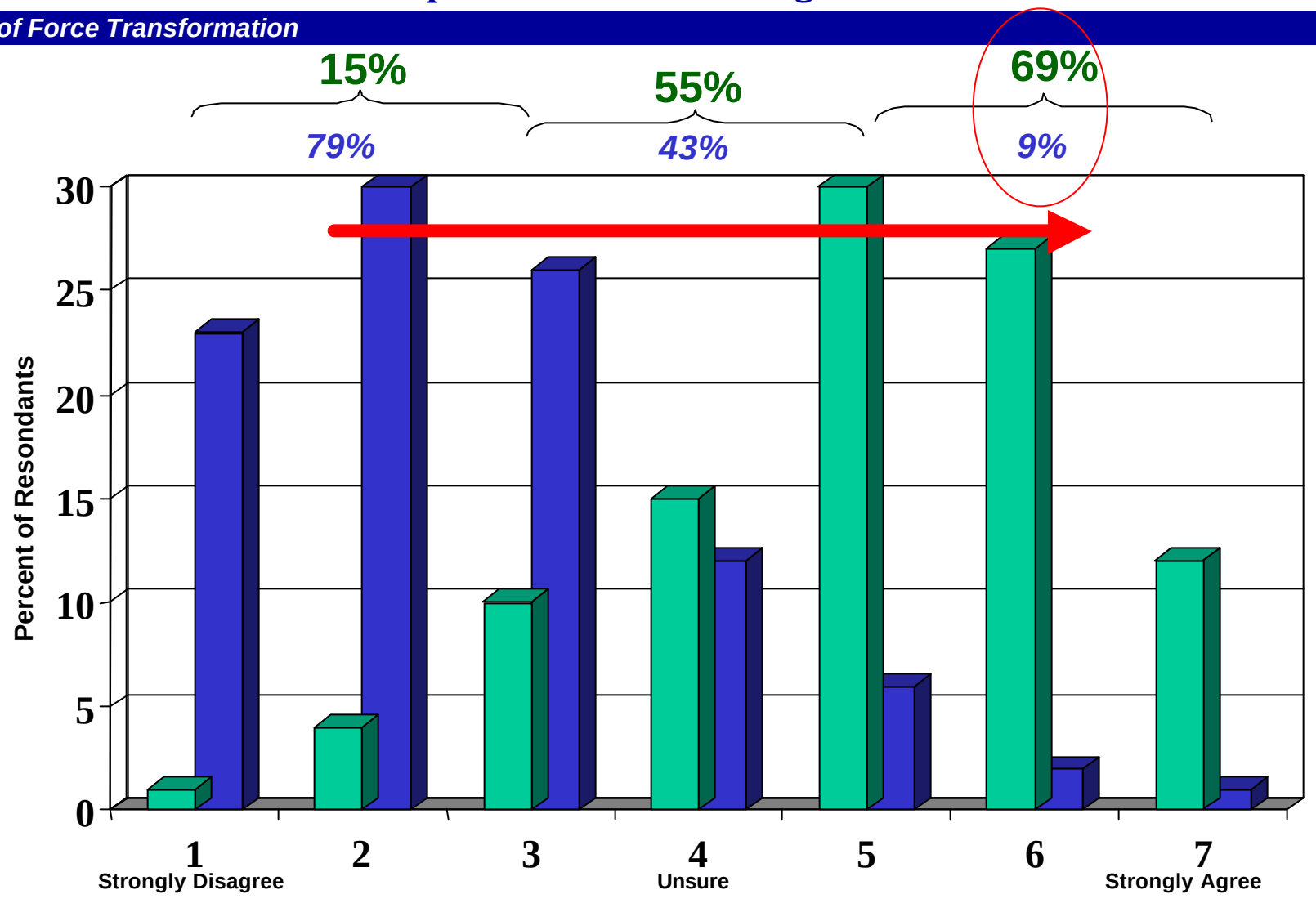

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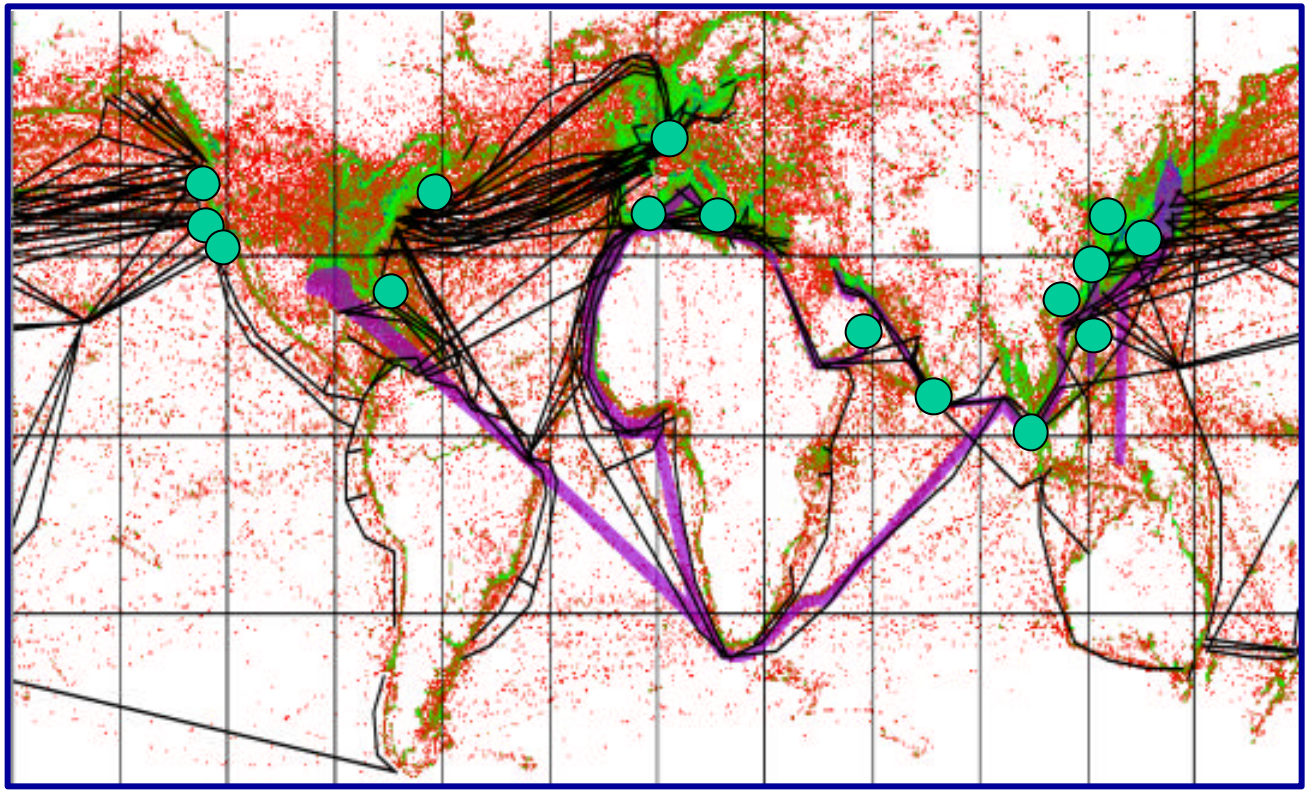
Global Trends

Office of Force Transformation

Globalization II → Globalization III



Industrial Age → Information Age

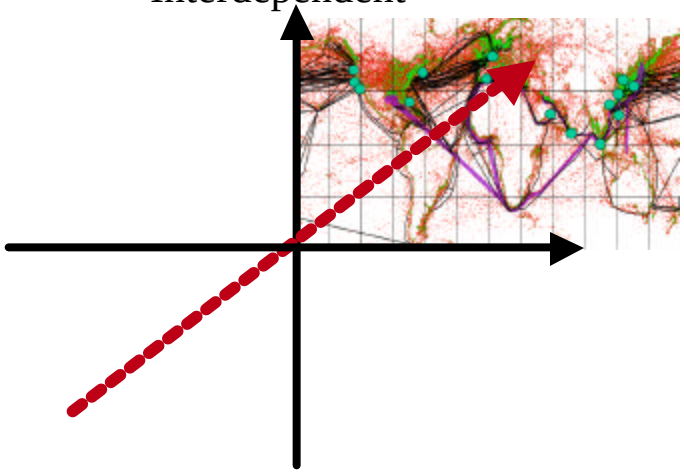
Global Trends

Information Age

- Short Cycle Time
- New Competencies
- Adaptive Planning
- Integrated Joint
- Interdependent

Globalization II

- Developed Rules
- Mature Markets
- Narrowing Customer Base
- Security=Defense



Globalization III

- Emerging Rules
- Market Opportunities
- New Customer Base Emerging
- Security=All Else+Defense

Industrial Age

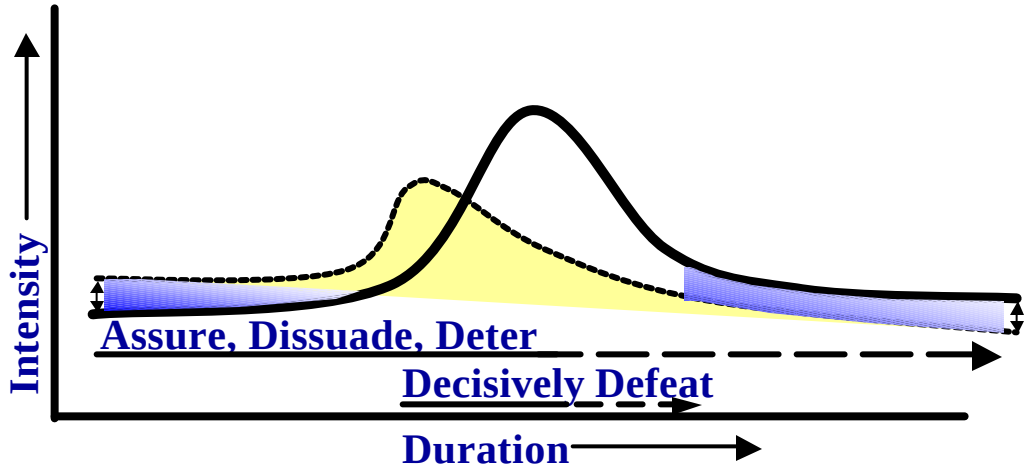
- Long Cycle Time
- Well Developed Tools/Processes
- Deliberate Planning
- Deconflicted Joint
- Tortured Interoperability

Expanding Competition

Policy Outcome = f {Power, Moral Principle}

U.S. power is unmatched

- Therefore, U.S. policy will be attacked through its moral principles (legitimacy, international law, etc.)



If the frontiers of National Security can be everywhere and are not territorial borders but fault lines within societies, then…

- The nexus of foreign and domestic security policy is intelligence
- We must be able to look and operate deeply within societies

Assured Access includes the domains of political victory

- Speed of modern warfare creates a continuum, not a succession of phases

Global Trends

…Military Response

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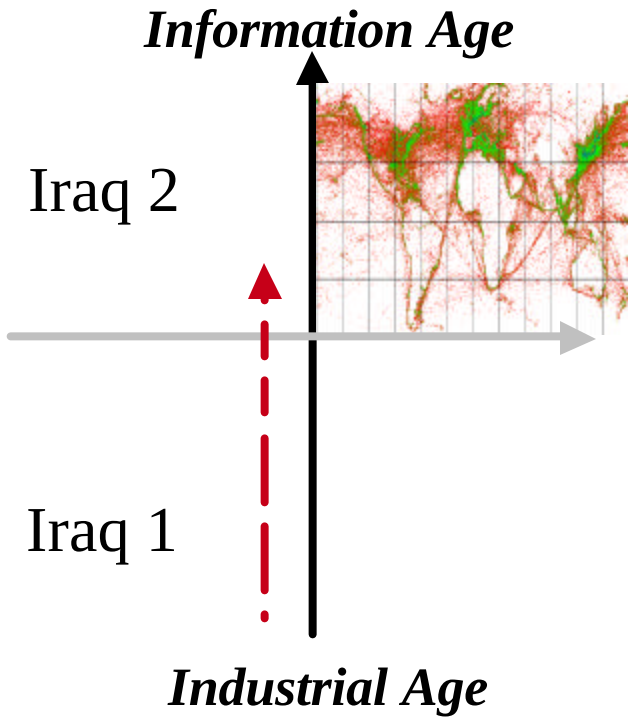
The Future Force:

- More expeditionary (including lighter, more lethal)
- More networked
- Designed to leverage the exterior positions (precision from distance as sensors move in)
- Leverages increasingly persistent ISR
- Tighter sensor-shooter timelines (sensing, C2, fly-out)
- Values Information Superiority (information operations)
- Expanded unmanned capabilities (UAV, UCAV, UUV, robotics)



Global Trends…Threats

…Strategic Response

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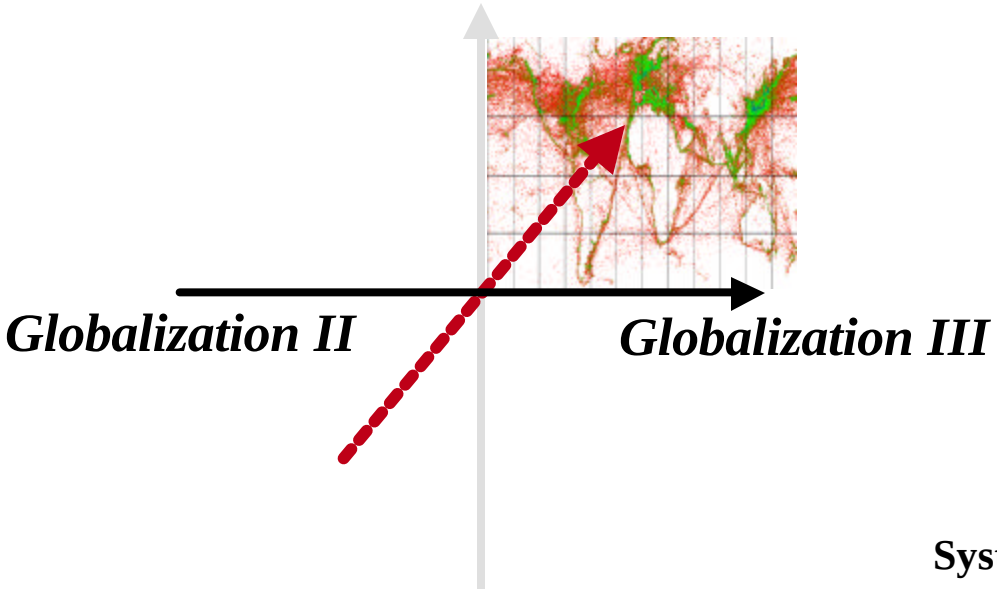


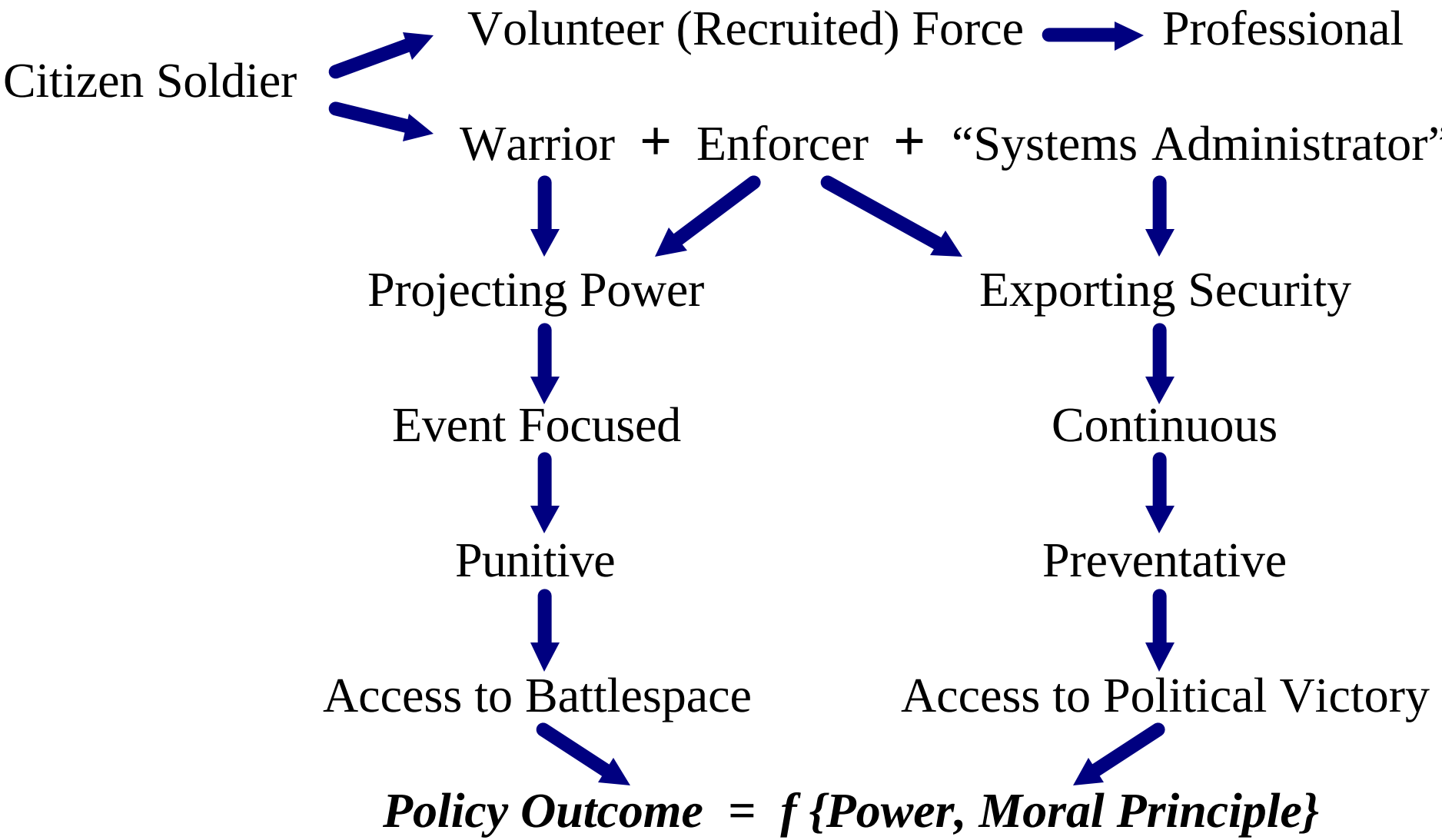
Strategic Capabilities:

- More Preventative- Less Punitive
- Achieve unambiguous warning earlier
- More SOF-Like characteristics
- A Deter Forward Force
- An Intel/Surveillance-based force
- Coping with systems perturbations

System	**-----[Great Power War?]-----**			
State	**Political Ideology**	**Hated Dictator**	**Hated Dictator w/Nukes**	**Nuclear Nationalists**
Individual	**Narco-terrorists**	**Regional Terrorists**	**International Terrorists**	**SEI w/Bugs**

Top Level Issues

…Culture: Values, Beliefs, Attitudes



The “Strategic Corporal”

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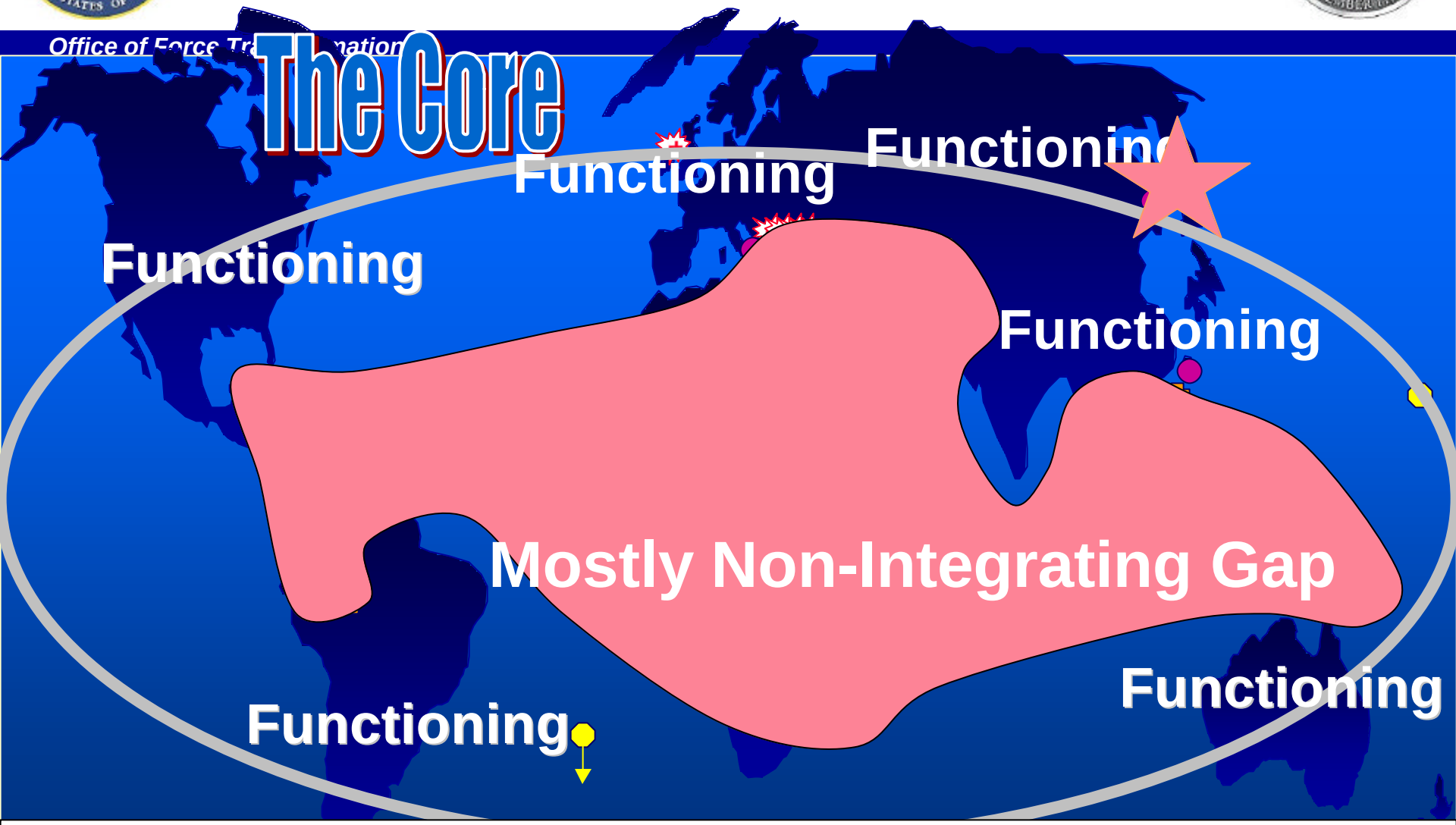
Globalization III



U.S. Military Responses to Situations, 1990-2002

Evac's | Peace/ Relief | Contingency Positioning | Show of Force | Combat

Global Trends…Threats

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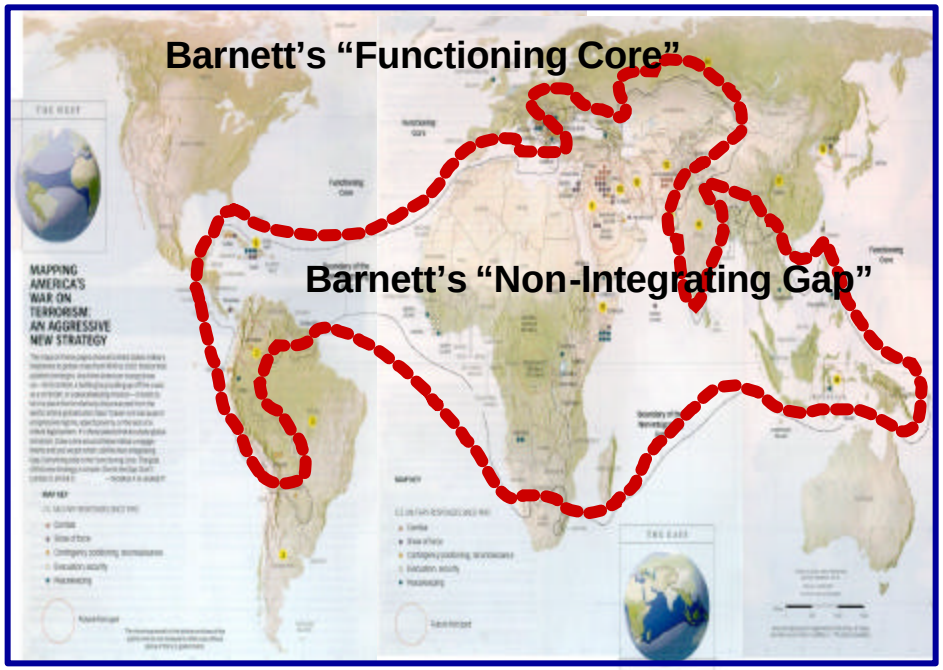
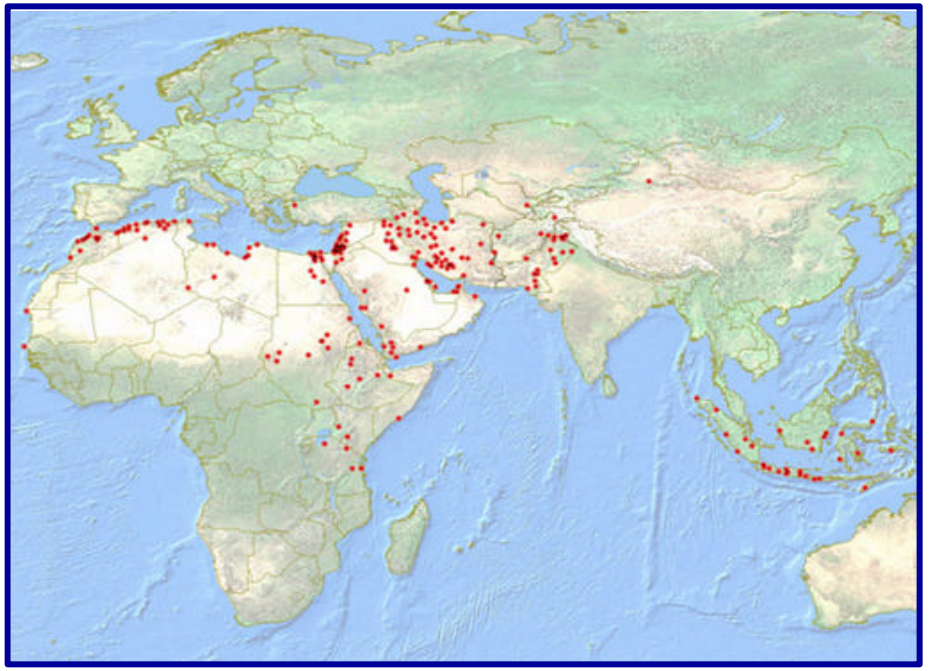
Disconnectedness ➡ Danger



Islamic Technical Centers



Militant Islamic Groups Network

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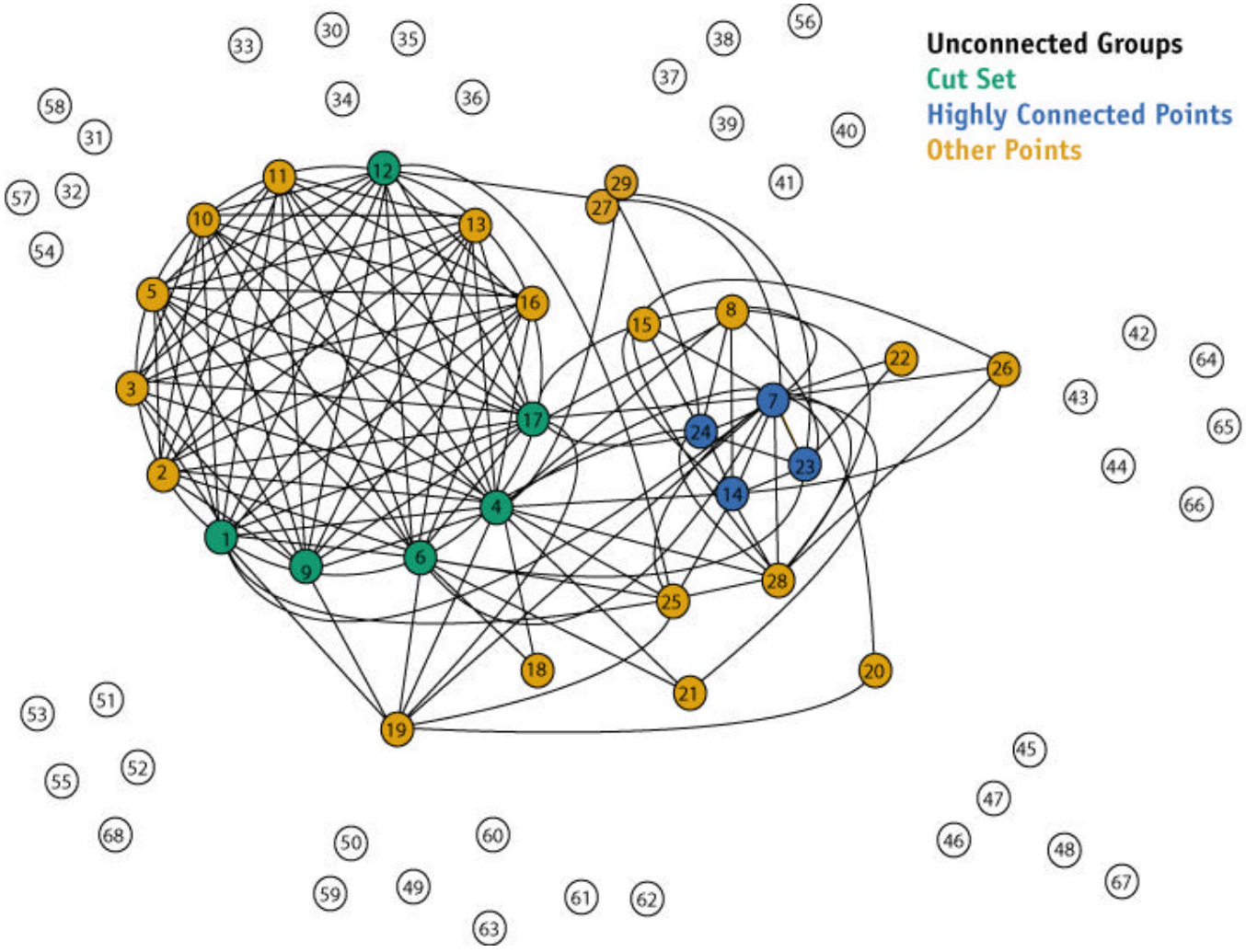

Center of Gravity?

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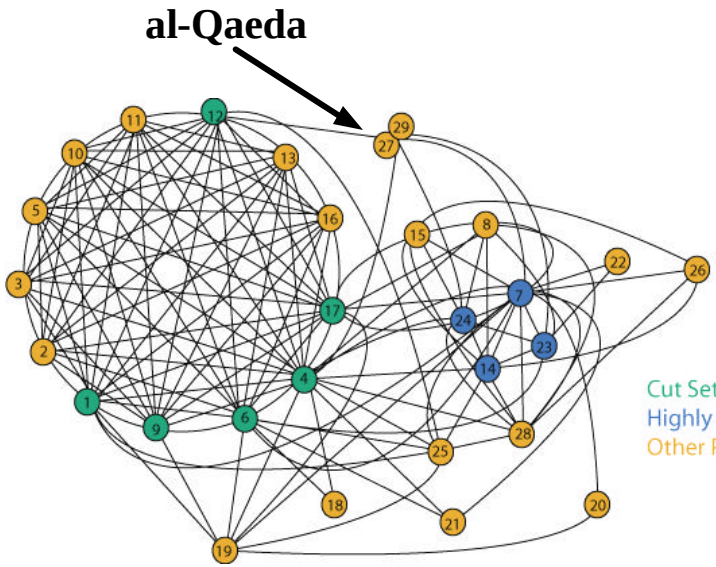

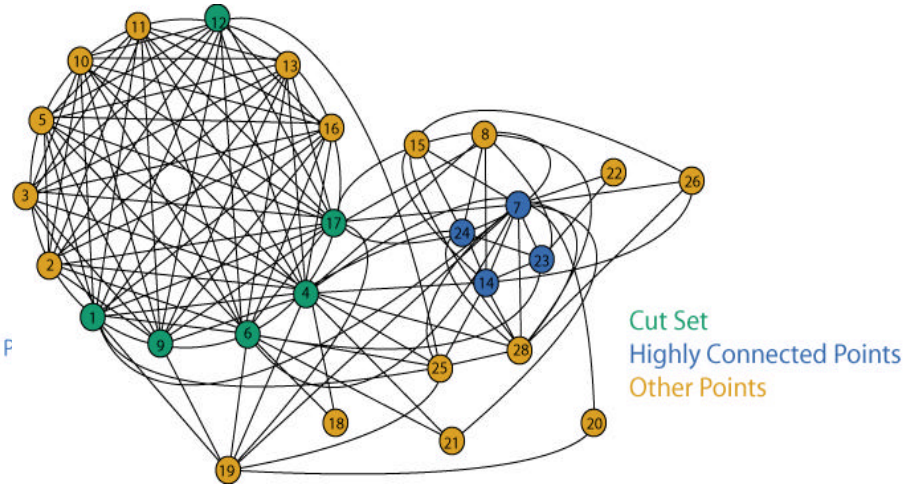

Strategic Posture

…Exporting security

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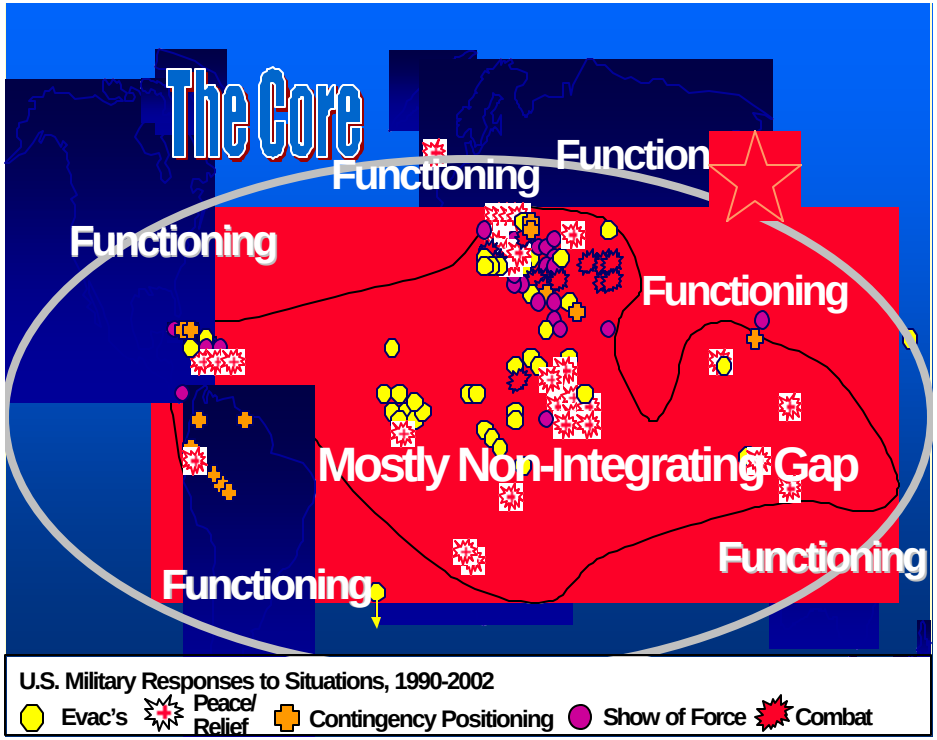

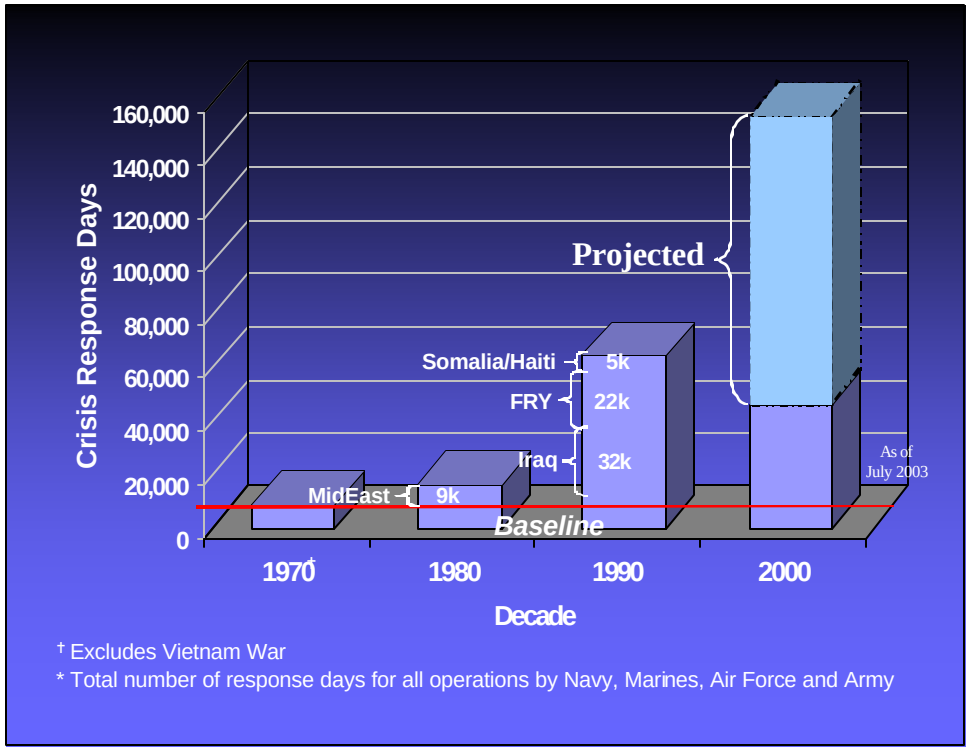

The Red Zone…

…Our Response

Altering Conditions

…2nd derivative force

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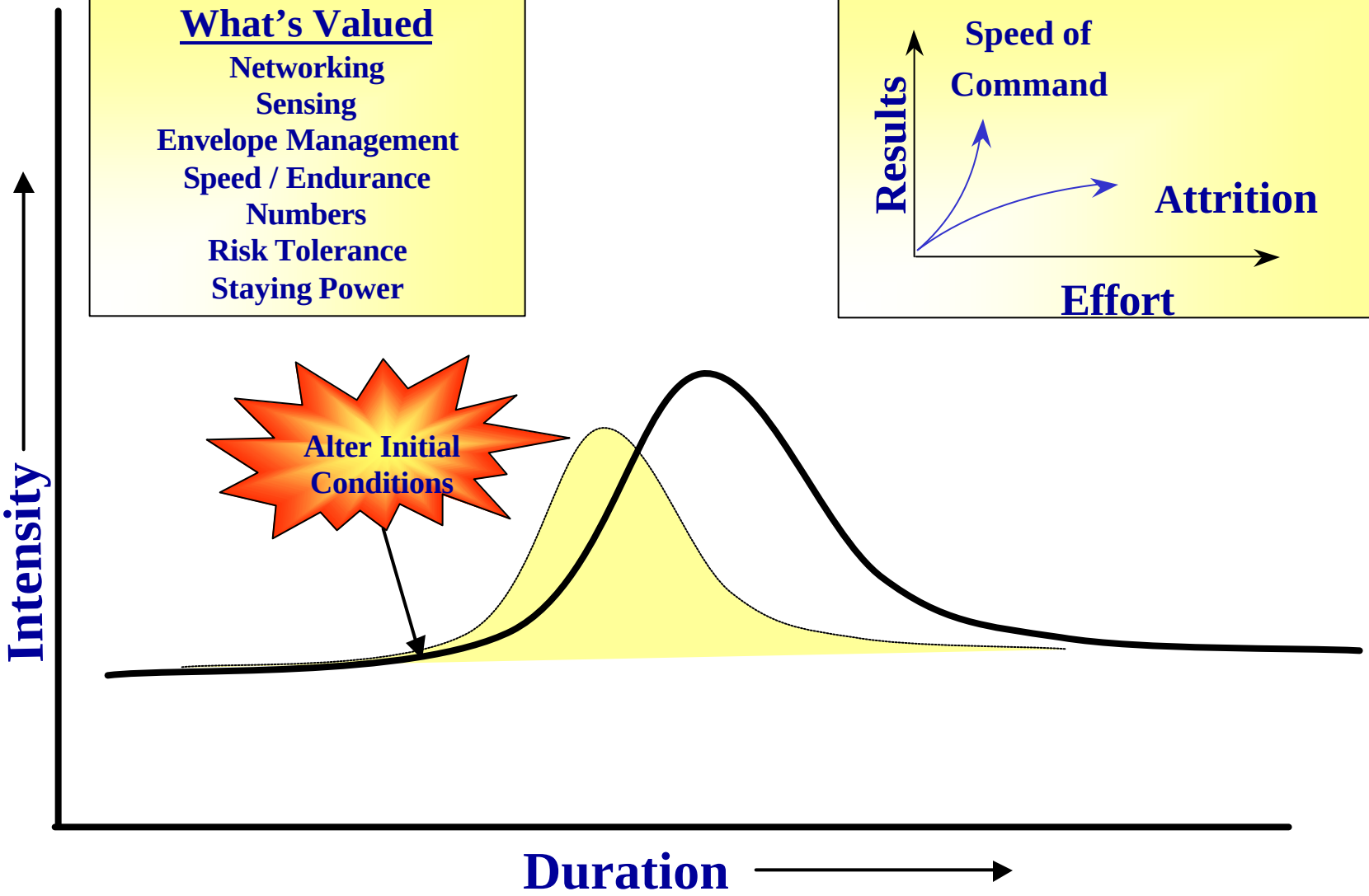
What's Valued

- Networking
- Sensing
- Envelope Management
- Speed / Endurance
- Numbers
- Risk Tolerance
- Staying Power



Security System Balance?

…Major Movements

Strategic Posture/Balance

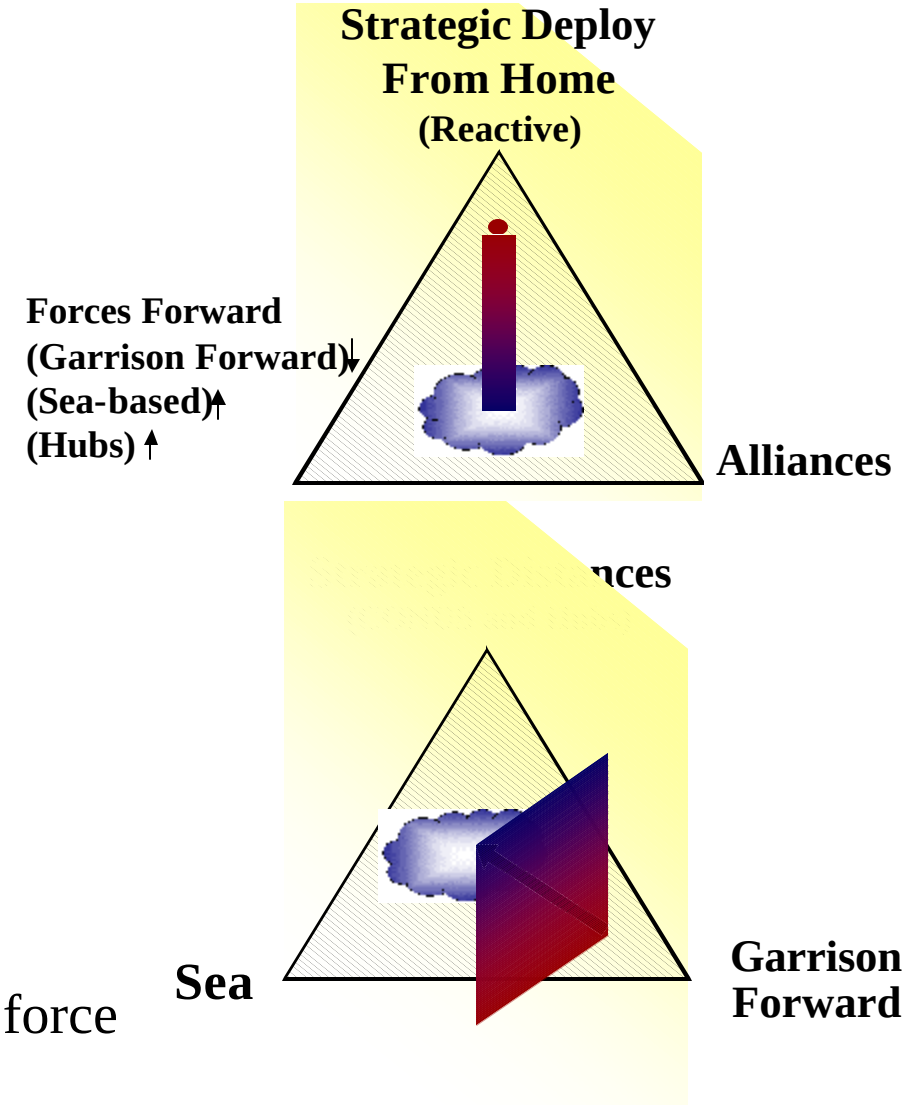
- Forces forward
- Deploy from home
- Allies

Operational Maneuver

- From forward garrison
- From the sea
- From strategic distances

Deter Forward

- 2d derivative force
- Sustaining force
- Reconstruction and Stabilization force



Total Force Requirement

… Security = All Else + Defense

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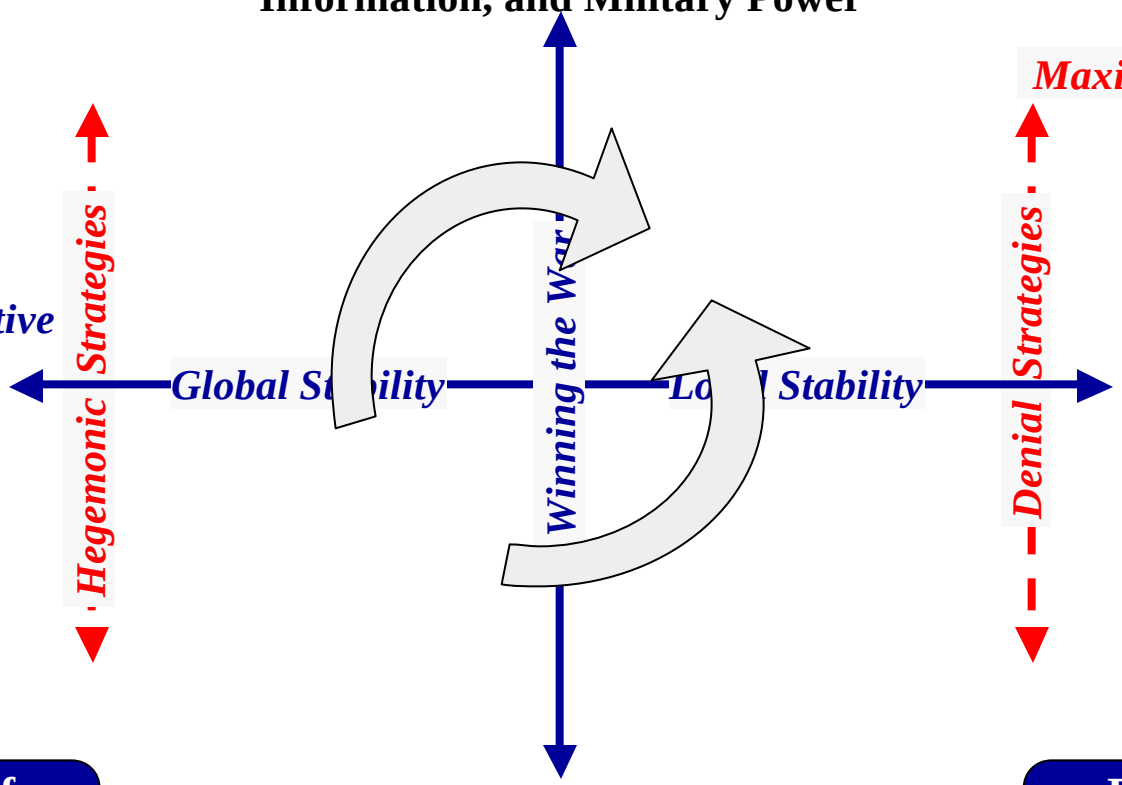
Domain of Cooperative Engagement

Winning / Maintaining the Peace

Social Intelligence
Political, Diplomatic, Economic, Information, and Military Power

Domain of Political Victory

Maximum Complexity



The Commons:
The Strategic Imperative
High Seas
Space
Cyberspace

The Close Fight:
Decisive Operations
Littorals
Low Altitude
Land

Domain of Strategic Primacy

Winning the Battle / Combat

Military Intelligence
Combat Power

Domain of Military Victory

Total Force Requirement

… Security = All Else + Defense

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Warfare: The Big Trends

Age	Weapons	Energy
Nomadic	Bare-Handed	Human
Agrarian	Cold	Mechanical
Industrial	Hot	Thermal
Information	*Information*	*Information*

Senior Colonel Wang Baucon, PLA

"Informationalized" War

- More *complicated* causes
- More *limited* goals
- *Richer* in content
- *Shorter* duration
- *Decreased* damages
- *Increased integration* of operations
- Increased significance of *intangibles*

Warfighting Advantage

Networked Forces

Outfight

Non-Networked Forces

Within the next 20 years, attacks upon computer networks will be as important as delivery of munitions to military operations.

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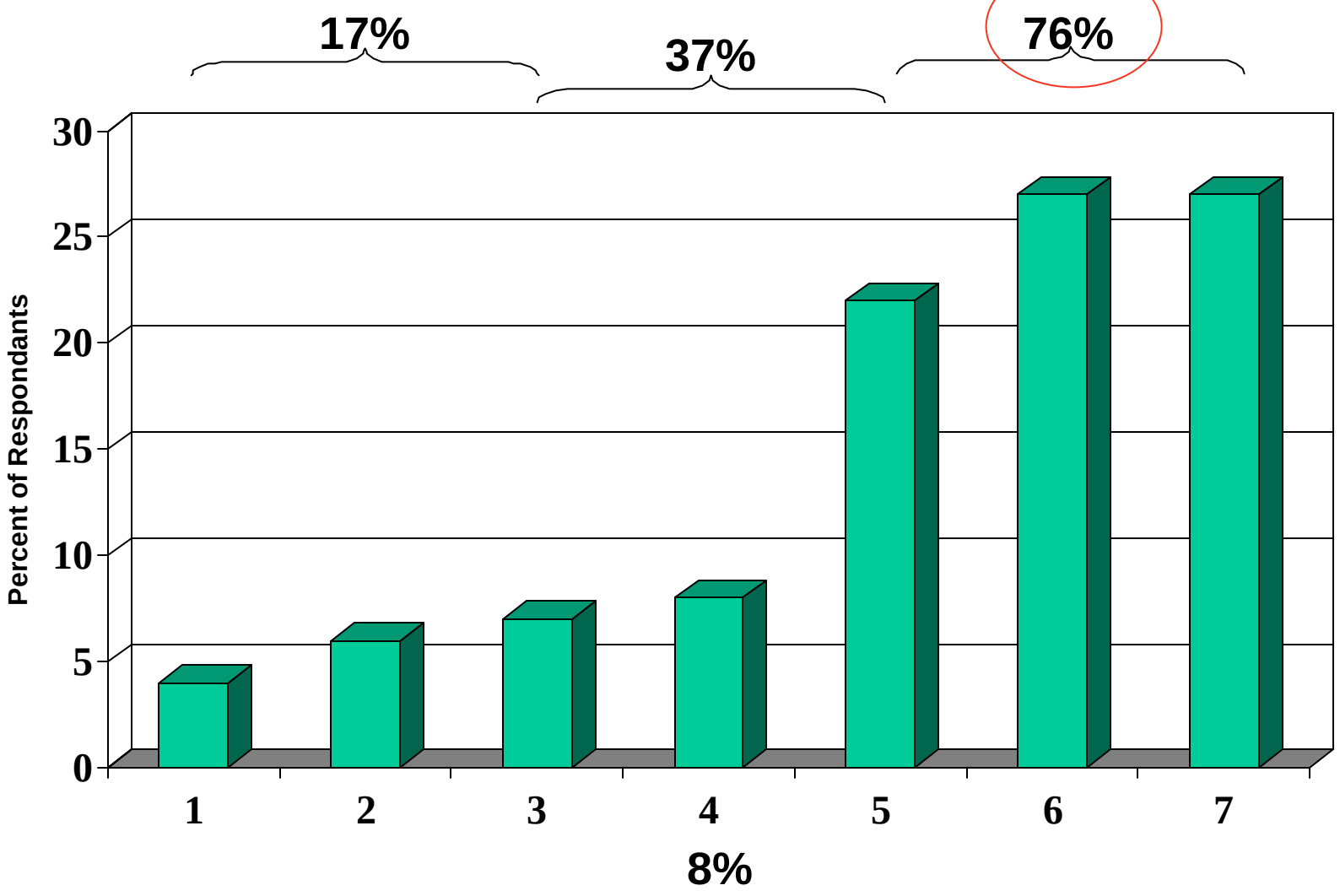

"The Limits of Transformation: Officer Attitudes toward the RMA," Tom Mahnken and James Fitzsimmons NWC, 2003

Within the next 20 years, attacks upon computer networks will become a central feature of military operations.

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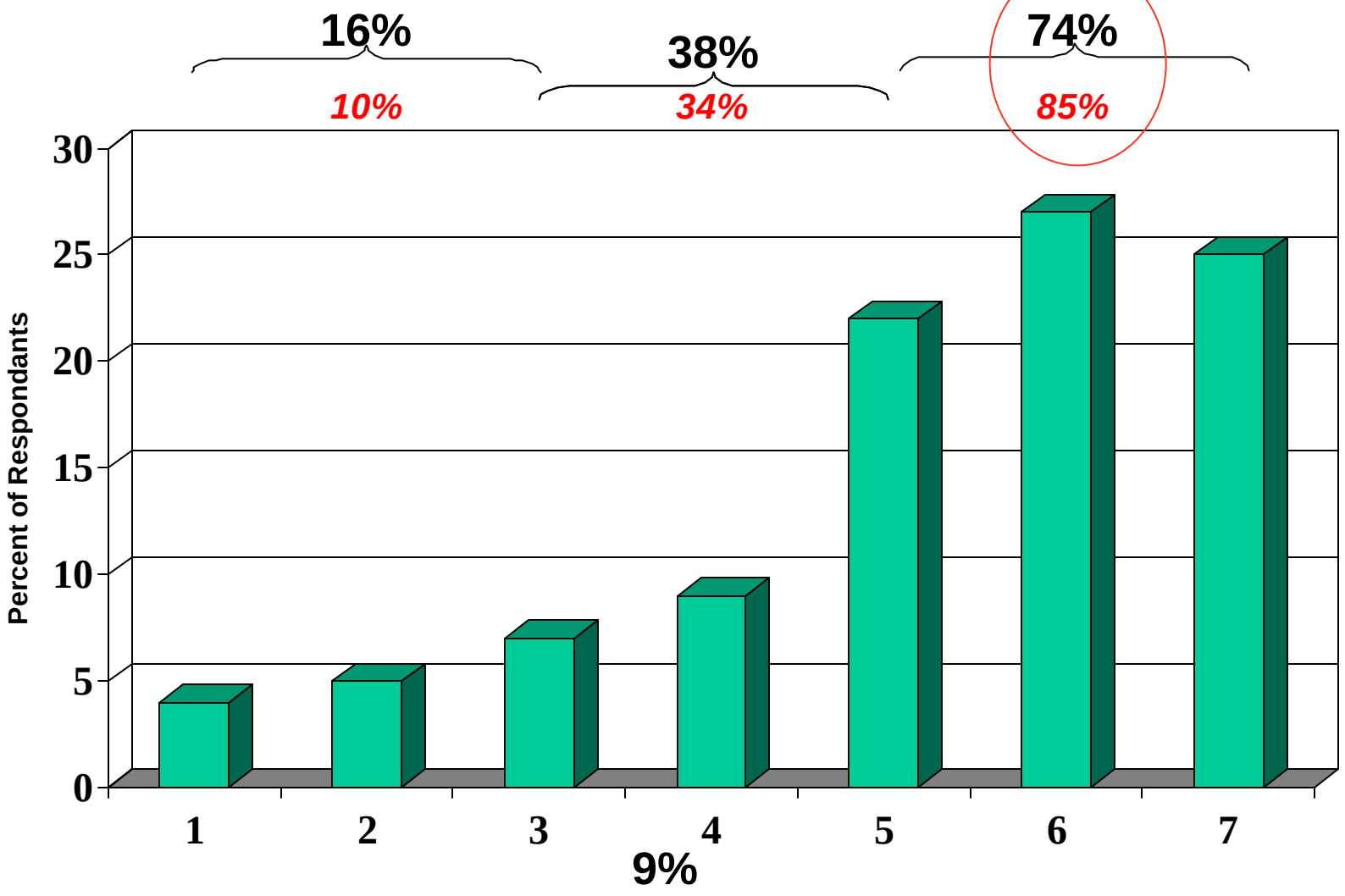

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Military Response to Information Age:
Network Centric Warfare

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Translates an Information Advantage into a decisive Warfighting Advantage

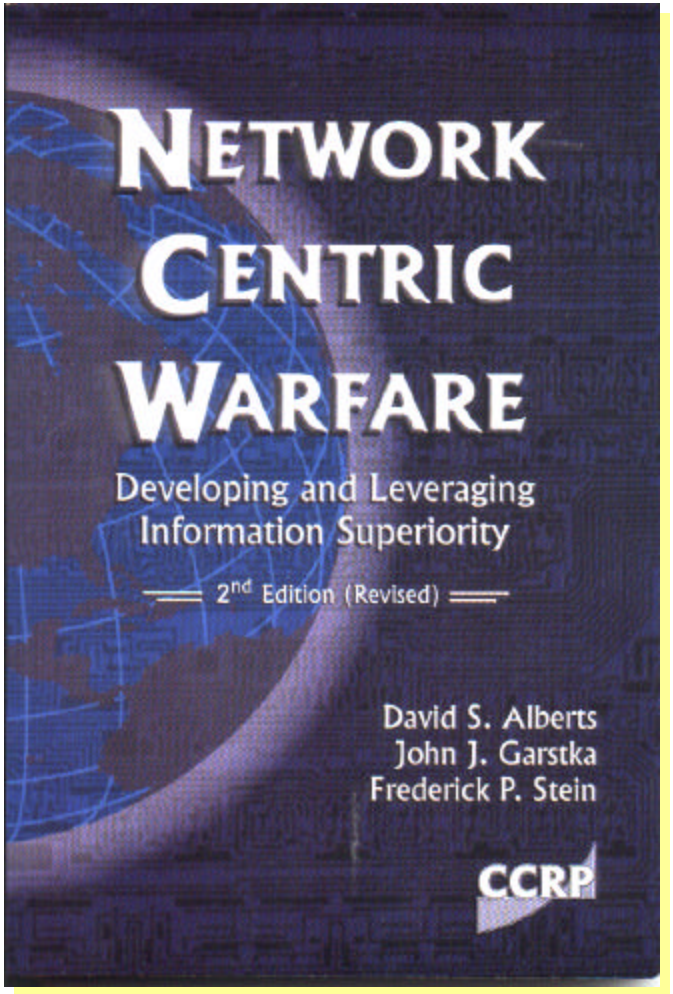
Information Advantage - enabled by the robust networking of well informed geographically dispersed forces

Characterized by:

- **Information sharing**
- **Shared situational awareness**
- **Knowledge of commander's intent**

Warfighting Advantage - exploits *behavioral* change and new doctrine to enable:

- **Self-synchronization**
- **Speed of command**
- **Increased combat power**



Information Sharing is a New Source of Power

ADMIRAL, WITH ALL DUE RESPECT— COULD WE HAVE LESS NETWORK-CENTRIC AND MORE ROUNDS ON TARGET?!

The Future Land Warrior?

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Mass-Based Soldier

Info-Based Soldier

Information-Age Warfare

…Domains of conflict

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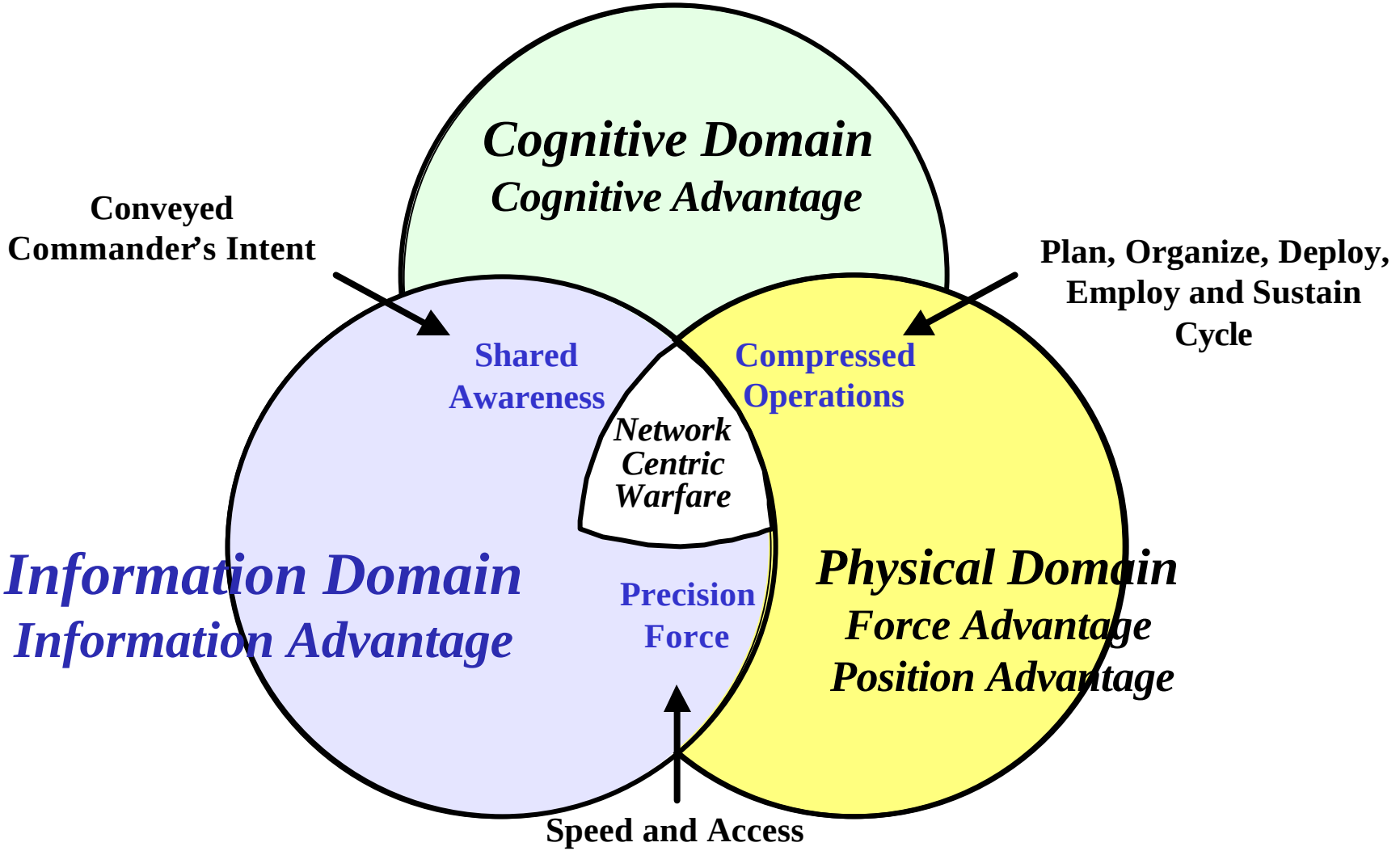

Network-Centric Warfare

…A Management Perspective

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STAFFING	Information-age skills The fight for talent New employer/employee relationship
PLANNING	Distributed Collaborative Fast
ORGANIZING	Follows information Trimmed for speed
DIRECTING	By ruleset and incentives Self-synchronization By ensuring information access
CONTROLLING	By ensuring information access Trimmed for speed

It's all about information access and speed. . .

. . . *not* information management

Transforming Defense

… The Future Force

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The New Rules

- Fight first for *information superiority*
- *Speed* of command
- Access to information: *shared awareness*
- *Dispersed forces:* noncontiguous operations
- *Demassification*
- Elimination of *process lines*
  (e.g. - fusion of ops, intel & logistics or organize, deploy, employ & sustain)
- Elimination of *structural lines*
  (e.g. - Joint ops at the small unit level)
- *Self-synchronization*
- *Alter* initial conditions at *higher rates of change*
- *Compression* of levels of war

Network-Centric Warfare

High Rates of Change
Closely Coupled Events
Lock In / Out
Speed of Command
Self Synchronization

What's Valued

Maneuver
Sensing
Envelope Management
Speed / Endurance
Numbers
Risk Tolerance
Networking

Transforming Defense

… Corporate Strategy

Part I: Continuous small steps

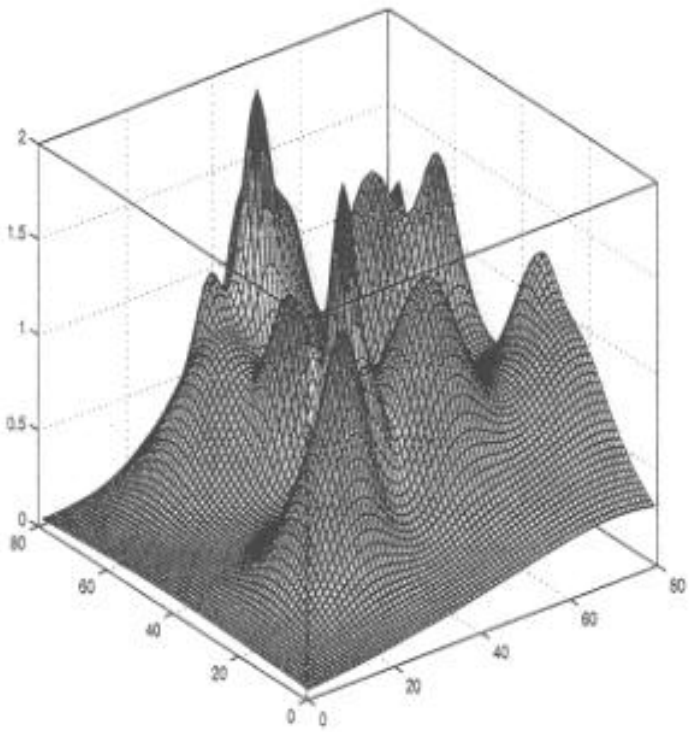
- *Sustaining*
- *Evolutionary changes*
- *Stay on the local maximum*

Part II: Many medium jumps

- *Explore and expand the local region*
- *New doctrine / organization / systems*

Part III: A few big bets

- *Could change DoD*
- *Change the world*
- *Create a new game with new rules*



"If you are not making any big bets you are a fixed strategic target <u>and</u> at risk."

Candidates for Action Now

…Identify issues of regret

Warfare Elements

- *Fire* - Non-lethals, Directed Energy, Redirected Energy
- *Maneuver* - Sea basing, vertical battlefield, lift for operational maneuver
- *Protection* - Urban Operations, "Bug-to-Drug" Cycle Time
- *C2&C* – Joint Interdependency vs. Interoperability
- *ISR* - Demand-centered Intel, Tactically Responsive Space
- *Logistics* - Joint demand-centered logistics

Policy Outcome = f {Power, Moral Principle}

Risk Management Areas (creating on-ramps)

- Joint S&T
- Joint Experimentation
- Modern Warfare Modeling Tools
- People: cost or resource

The Problem … An Explosion of Data

The Impact of Moore's Law

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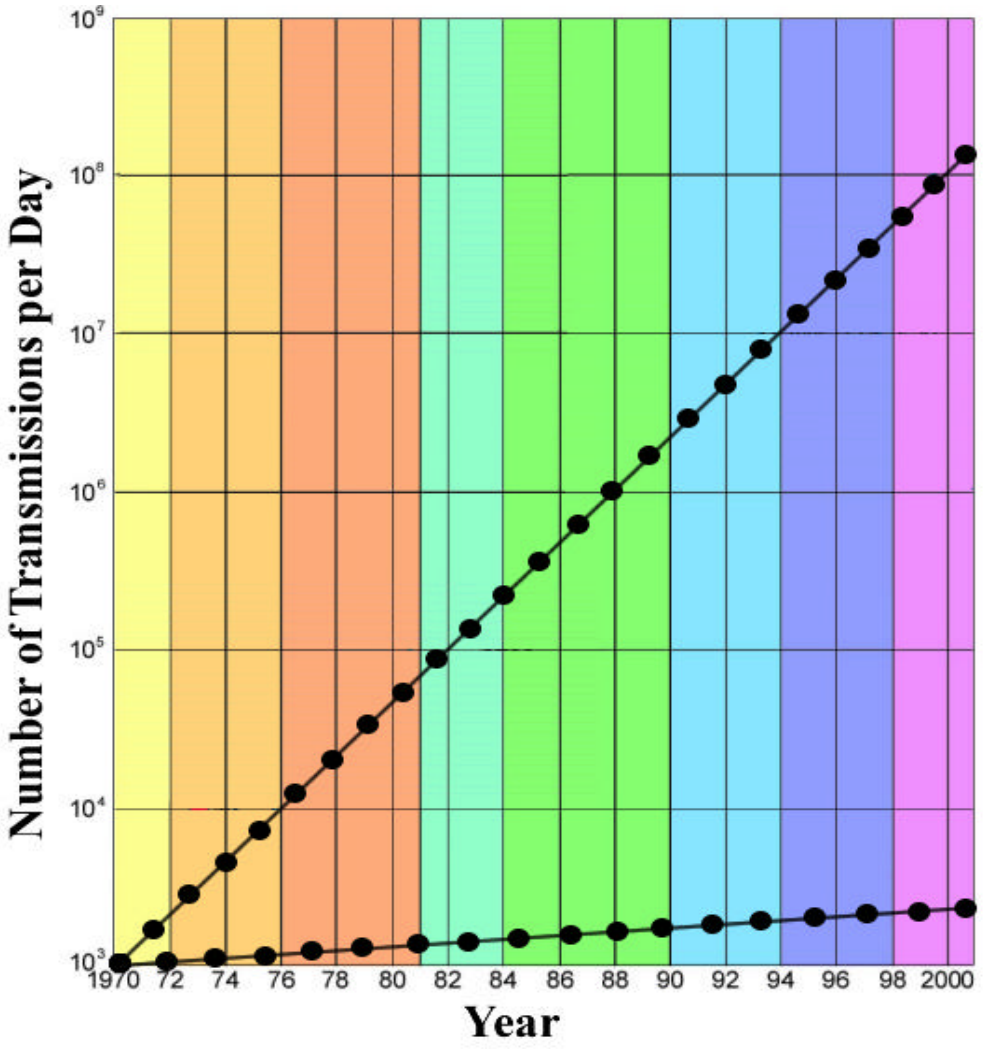


Collection and Processing (Exponential Increases)

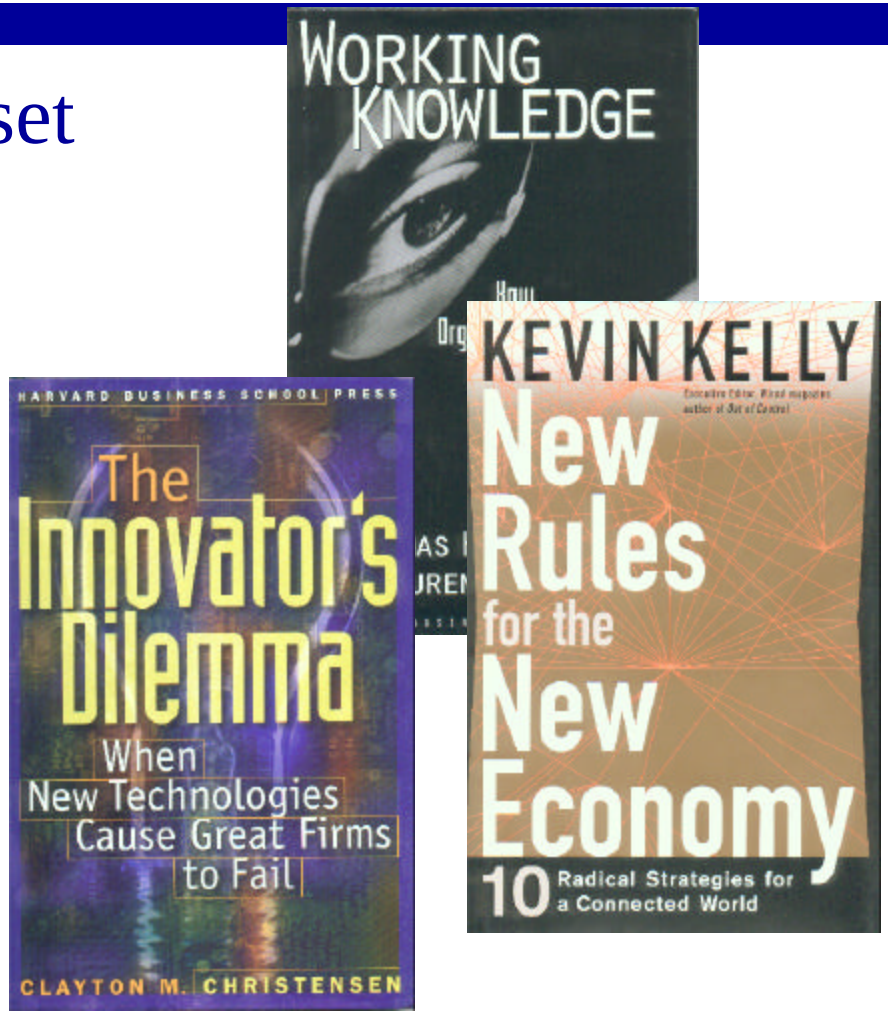
Issues

- *Collection & Analysis Gap Results In …*
  - **Analytical Problems**
  - **Data sharing Problems**
  - **Dissemination Problems**

Exploitation and Analysis (Moderate Slope, Linear Increases)

Innovation Techniques

- Examine the underlying ruleset
- Relocate the complexity
- Break the model
- Change perspective
- Cross disciplines
- Synthesize
- Solve a different problem
  - change the context
  - change the relationships
- Identify the inevitable and make it a virtue



Concept of Innovation

Unarticulated Needs

Demonstration

Innovation

Emerging Needs

Force Transformation

Consensual Change

Non-consensual Change

Joint/Service Experimentation

Emerging Means & Methods

Exercise

Articulated Needs

Test & Evaluation

Innovation = Creativity x Implementation

EEK!!
ANOTHER CONCEPT!
DD-21
Economy B
STREET FIGHTER
Economy A

Immunology

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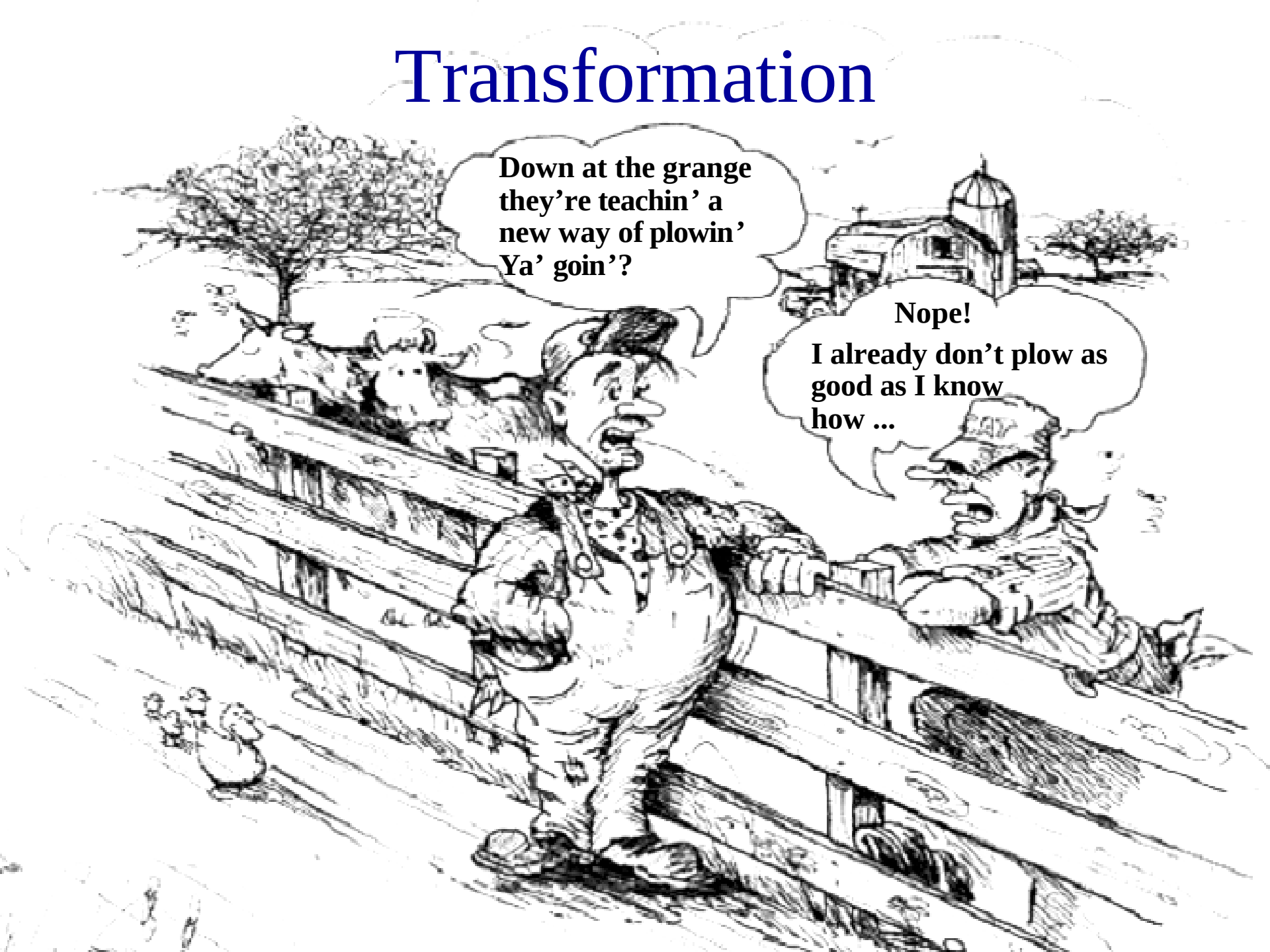
Vice Adm. Art Cebrowski knows how to rock the boat. It all started in August when he ran war games at the Naval War College in Newport, R.I.

Cebrowski added some small, turbocharged PT "street fighters" to the fleet. The boats helped the friendly force win the simulated war –35 days early. But when Cebrowski briefs the Pentagon this month about the results, big-ship admirals plan to say he's all wet, deriding the street fighters as "little f---ing ships" – LFS in DoD lingo. "If the next major naval battle is fought in Narragansett Bay," sneers one admiral, "street fighters will be decisive."

…But, what we saw

Transformation



Backup

Land Warfare: Trends

- The decisive domain is the most complex
- Retreat to complex domain favors defense
- Offense oriented open terrain → forces become tactically unstable
- Correct tactical instability with information, speed of response, active defense, non-lethals

Operation Iraqi Freedom

…What we saw

• *Grand Strategies in Tension*

"…the 21st century and September 11th have, in fact, changed the circumstances in the world significantly."

Secretary Donald Rumsfeld

• *Network-Centric Warfare Implementation*

"…it allowed us to make decisions and execute those decisions faster than any opponent."

Lt. Gen. David D. McKiernan

• *The Power of Transformation*

"…a campaign…unlike anything that we have seen before,"

Gen. Tommy Franks

The Challenge for Intelligence (and Enemy)

Asset wars

Industrial technical power

Information dominance

Precise physical targeting

Intelligence: secret nuggets and EEIs

Elite wars

Decapitation, insurgency, infiltration

Religion & ideology focus

Human & group targeting

Intelligence: the network and dynamics

Elite is mobilized via non-military assets

Irregular time paths and periods

Both sides can use technology

Connectivity and ideology of elites is key in fighting wars

Elite wars are political, social and economic science-centered

Intelligence Analysis Problem

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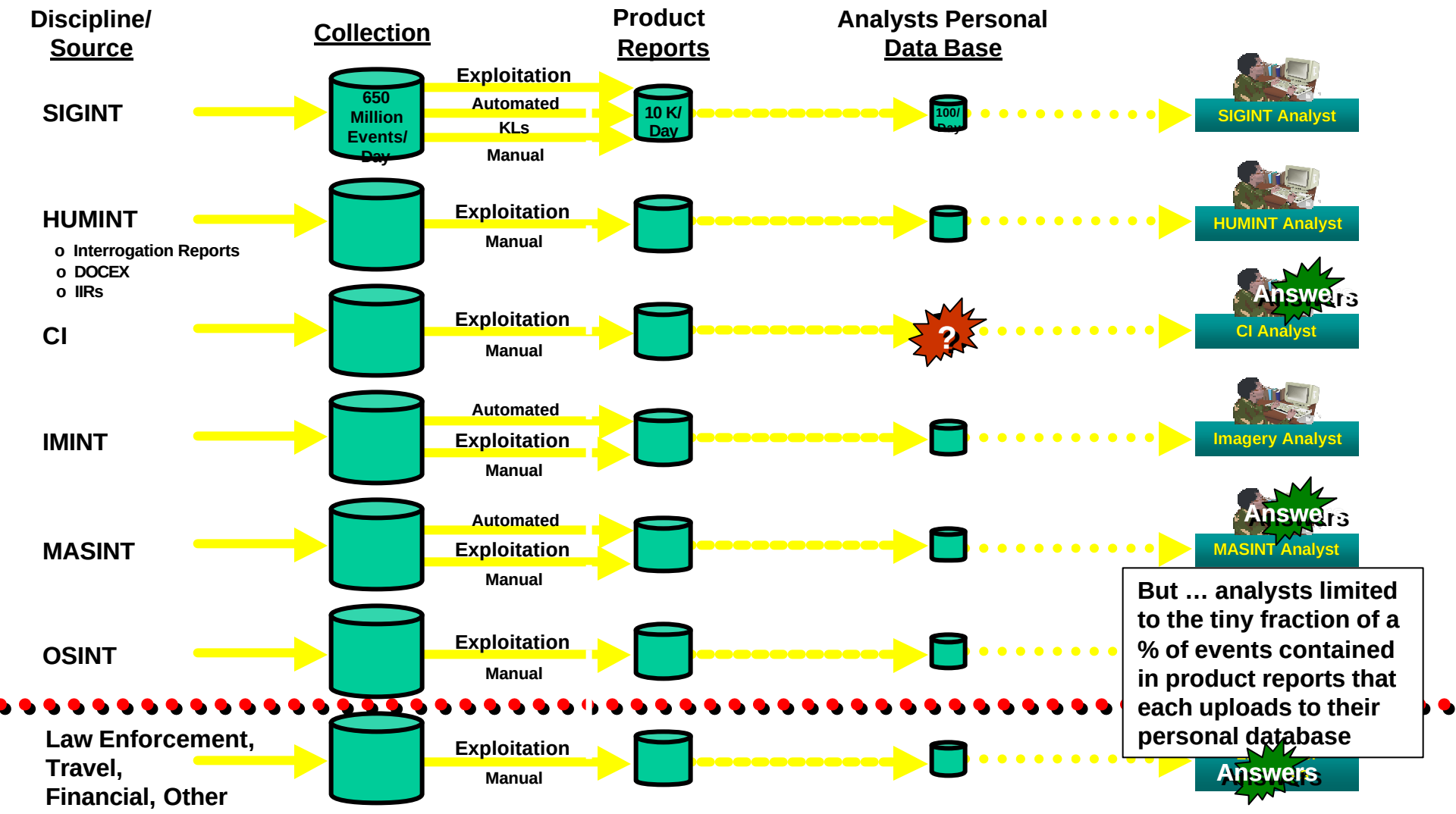

Process Transformation

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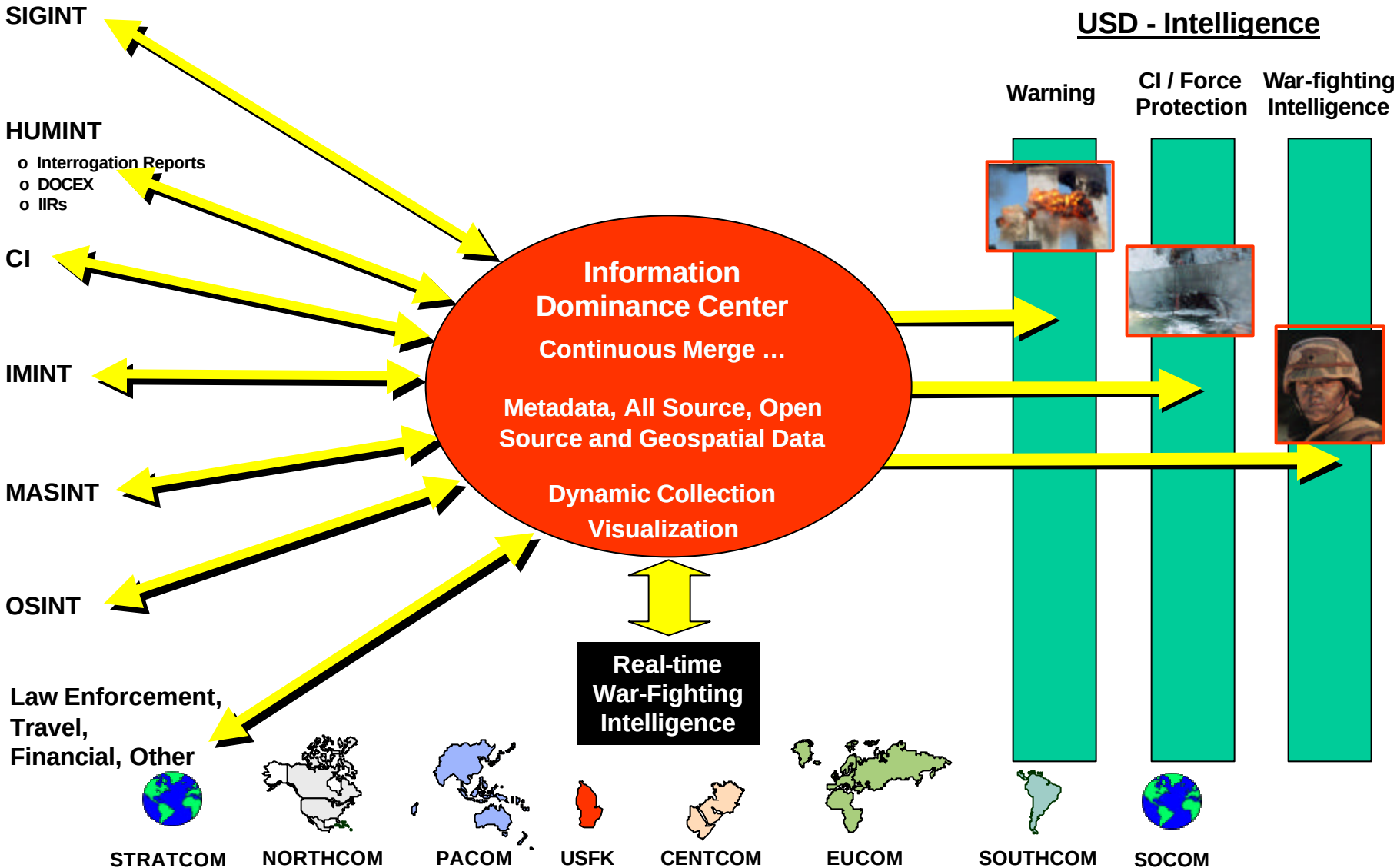

Chains vs. Networks

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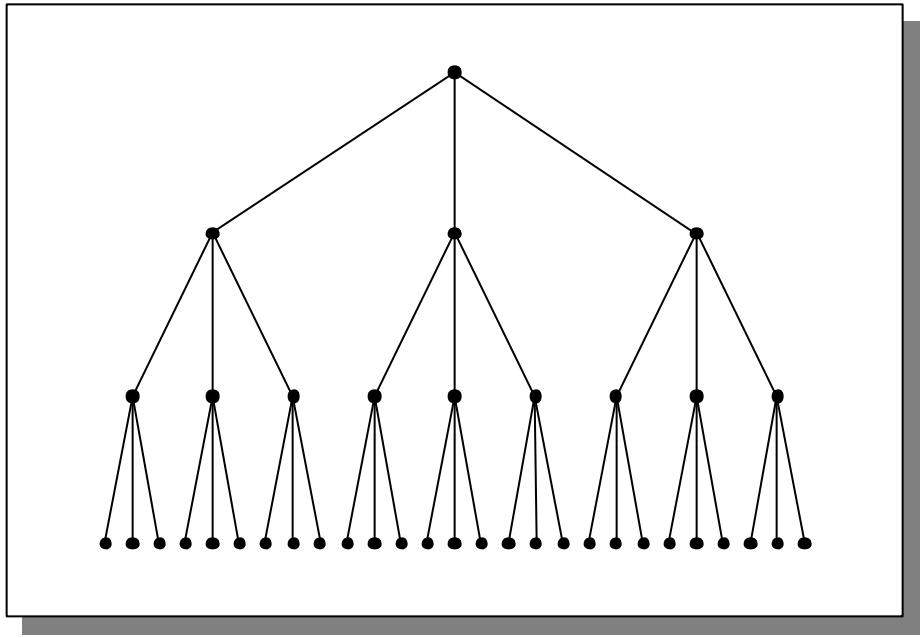

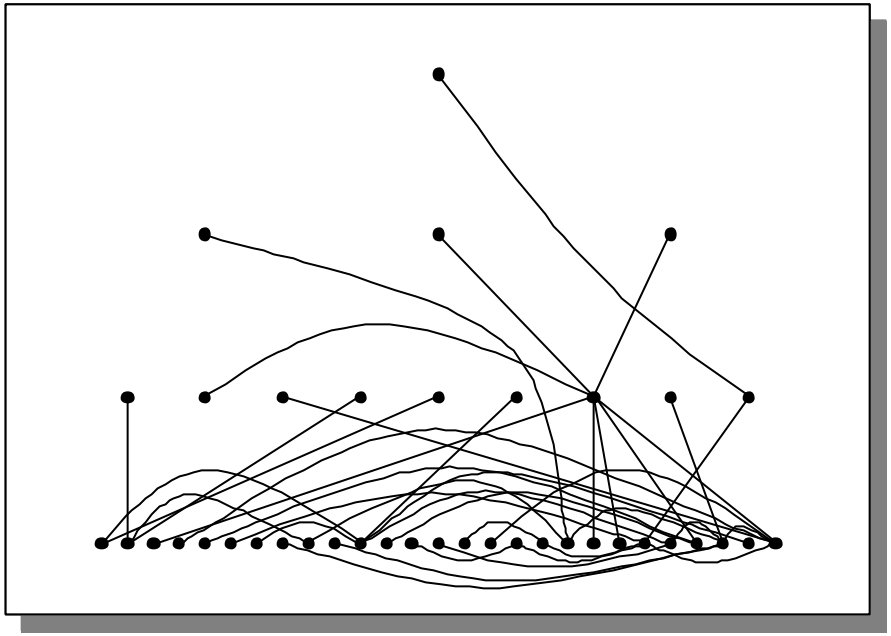

Chain

Too brittle, simple pattern, simple control, scaled

"business end" most poorly connected, hard to reconfigure or change flow

Network

Very robust, complex pattern, complex control, scale free

"business end" best connected, natural to reconfigure or change flow

What do these have in common?

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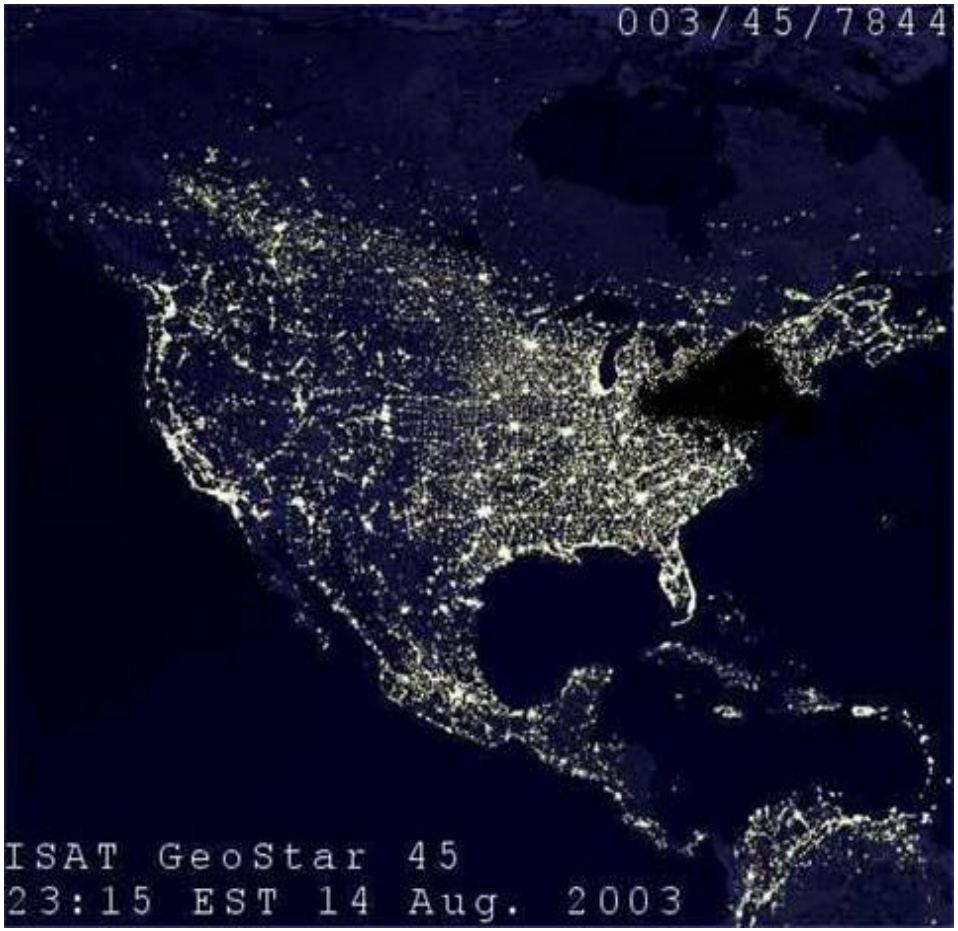

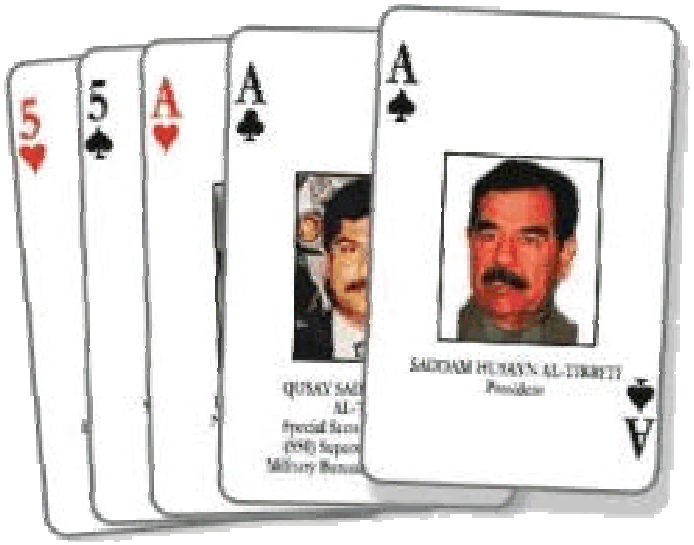

Total Force Requirement

… Security = All Else + Defense

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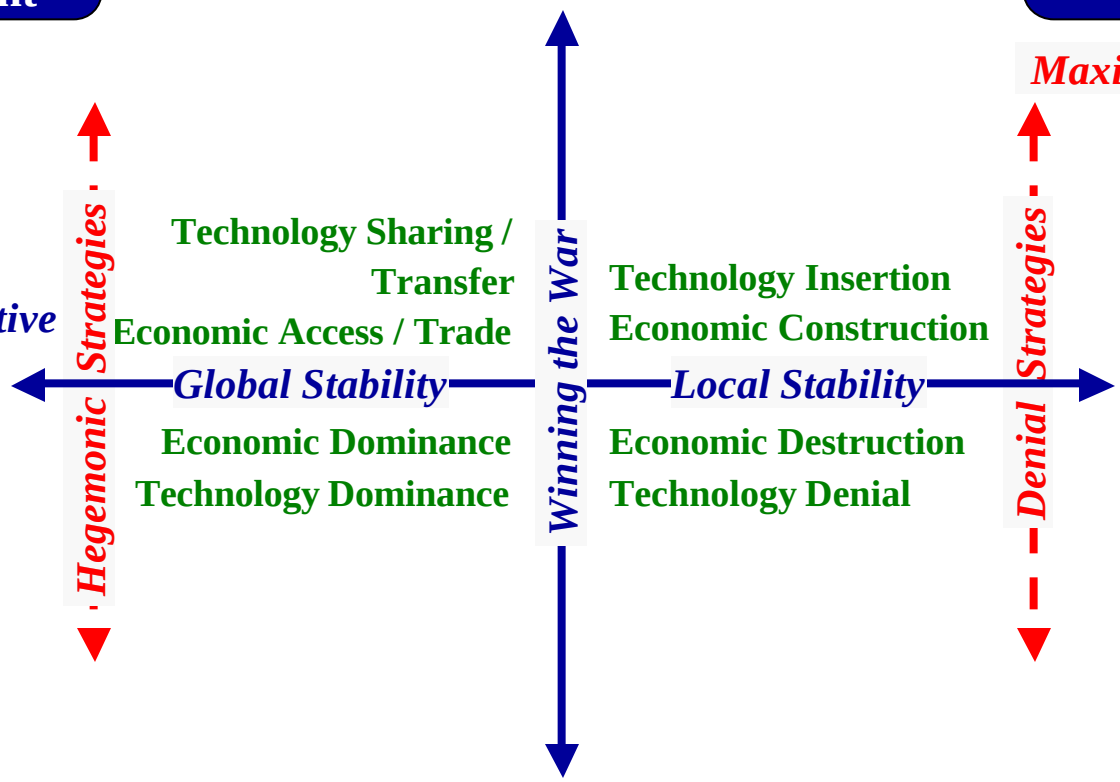

Understanding of Network Relationships is Critical

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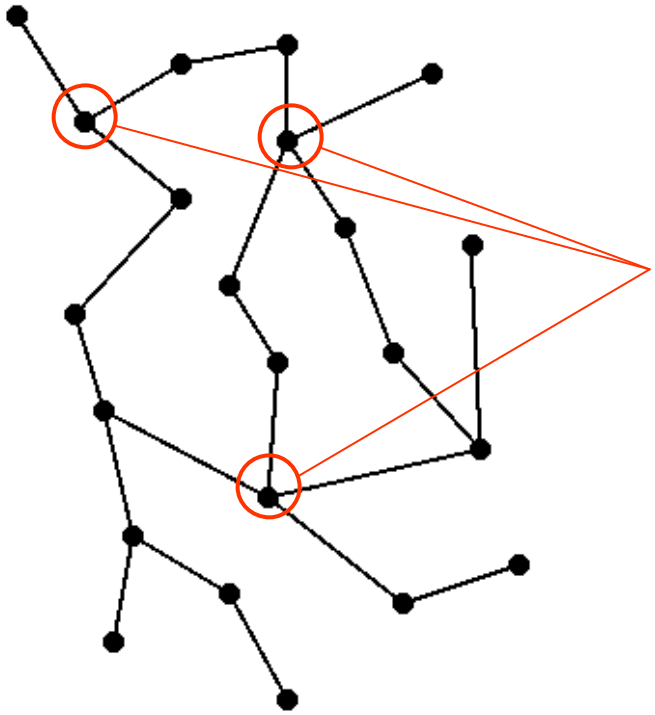
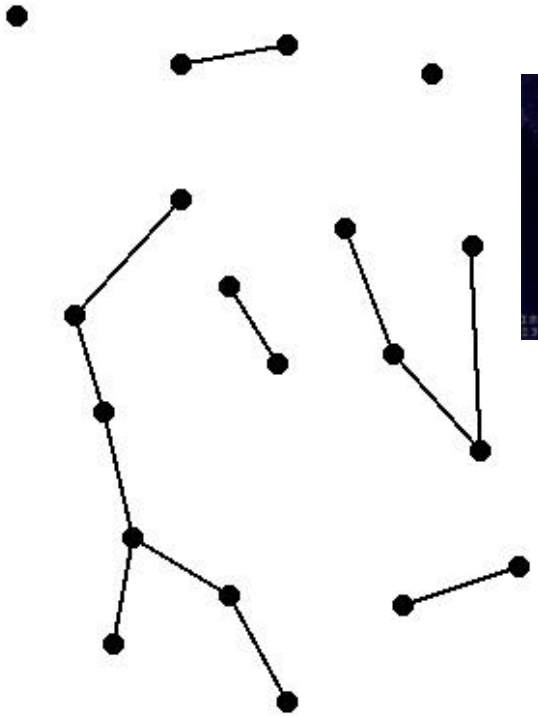


node failure

node attack



We need to understand. We need to prepare. We need to deliver. The question is how?

Transforming Defense

…To the Information-Age

Integrated systems	⇨	***Networking components***
Precision weapons	⇨	***Precision Effects***
Weapons reach	⇨	***Sensor reach***
Massed Offense	⇨	***Dispersed Force***
High volume strike force	⇨	***Full service maneuver force***
Securing the sanctuary	⇨	***Assuring Access***

Global Trends

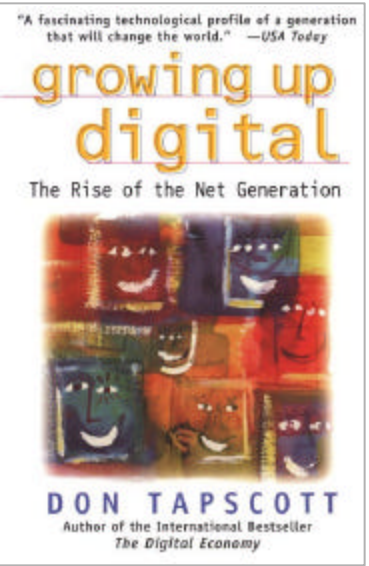
Office of Force Transformation

Industrial Age

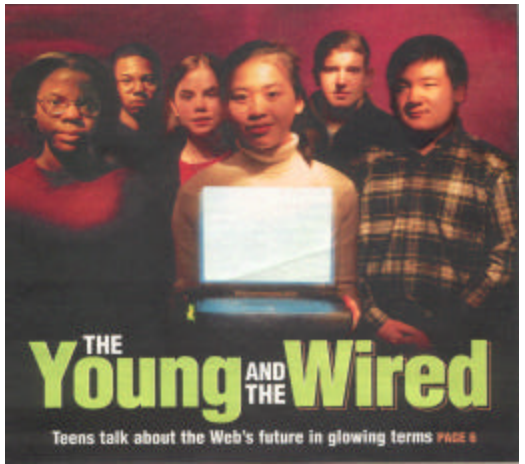
- Success = Scale + Scope
- Top Down - Centralized
- Vertical Integration
- Information Hoarding
- Local Awareness
- Arms Length Relationships
- Make and Sell
- Inwardly Focused

Information Age

- Success = Adaptability + Agility
- Empowering the “Edges”
- Virtual Integration
- Information Sharing
- Increased Transparency
- Collaboration & Synchronization
- Sense and Respond
- Externally Oriented
- Accelerated Innovation & Experimentation



- ***New Rules***
- ***New Behaviors***
- ***New Competencies***
- ***New Relationships***

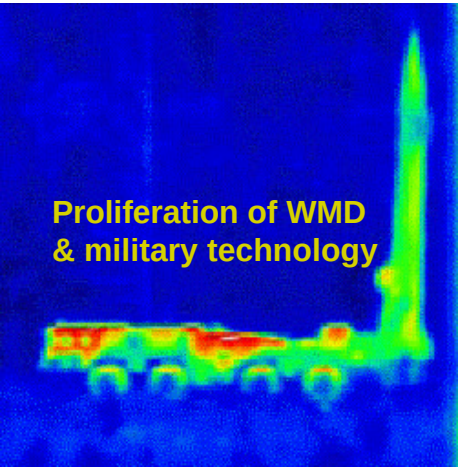


Global Trends

Globalization II → Globalization III

- Static, bipolar "market"
- Bulk of population in 3rd World
- Limits on security "exports"
- *Beliefs in Conflict: Political Ideology*
- Ordering principle = Great Power War; yet none since 1945

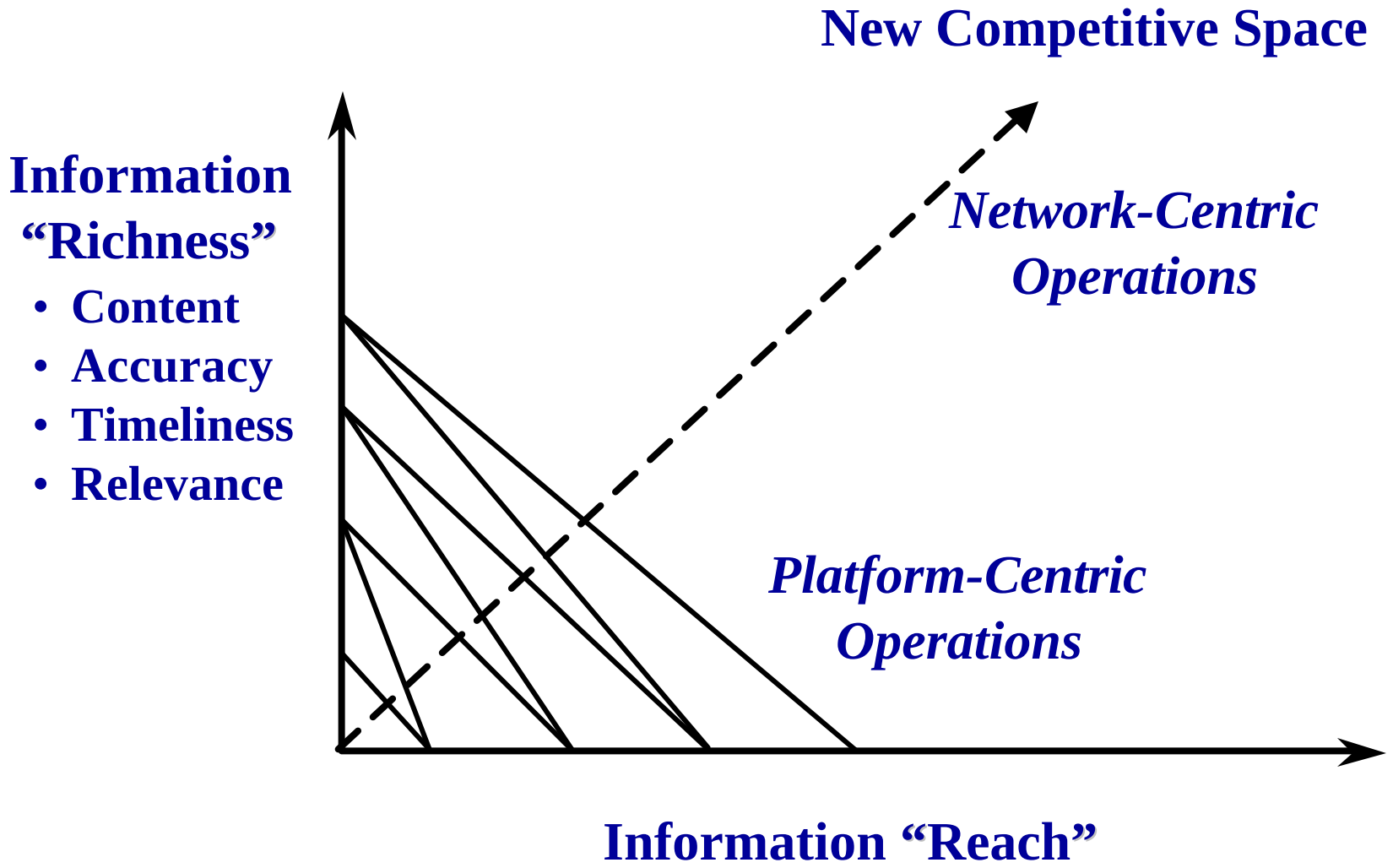
- Also bifurcated, but very fluid
- 4 Billion in Core, 2 Billion in Gap
- "Unlimited" global demand for security exports
- *Beliefs in Conflict: Religion/culture*
- Warfare now simultaneous across system, state and individual levels



- *New Rules*
- *New Institutions*
- *New Security Environment*
- *Disconnectedness* → *Danger*

Competitive Advantage

… New sources of power



Transforming Defense

…Evidence of transformation

- ***Increase*** our capability to dominate in the "Sensor War"
- ***Reduce*** or eliminate the enemy's ability to create "No Man's Lands"
- ***Compress*** and seamlessly integrate the cycle for planning, organizing, deploying, employing and sustaining U.S. forces
- ***Establish*** new command structures that leverage networked capabilities
- ***Turn*** an information advantage into a competitive advantage (decision superiority)
- ***Radically reduce*** the logistical demands of deployed forces
- ***Create*** concepts and capabilities to operationalize Information superiority

Competitive Advantage

… New sources of power

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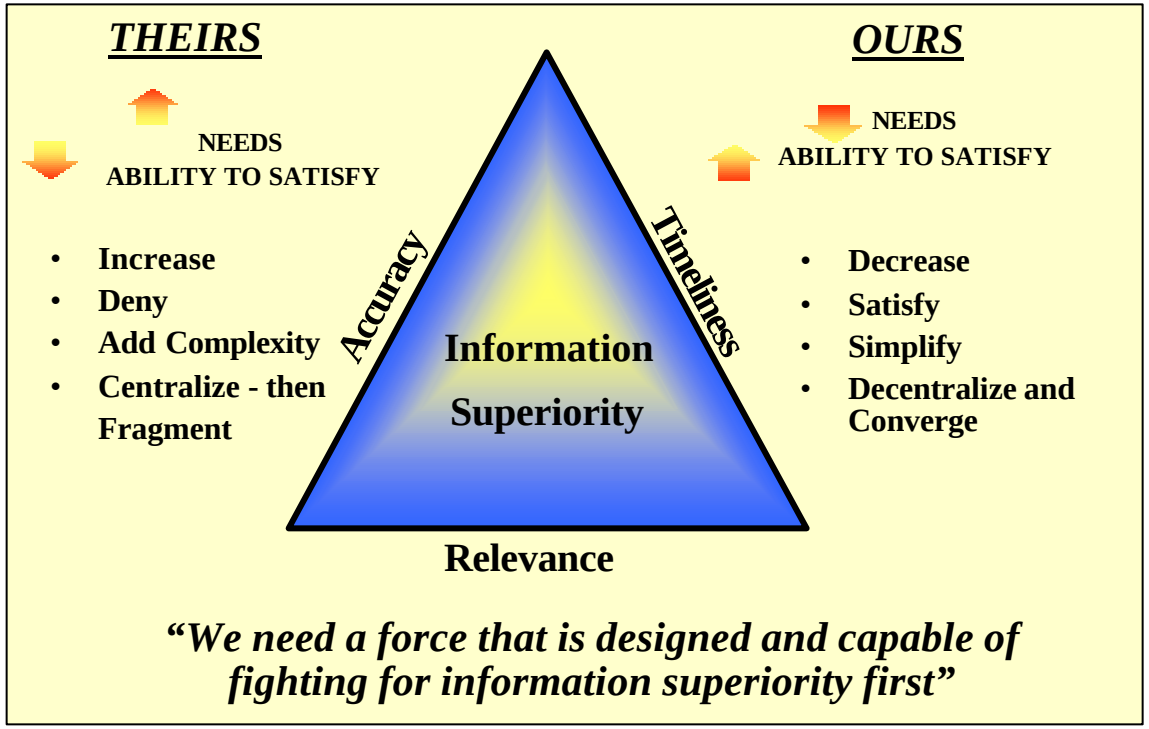
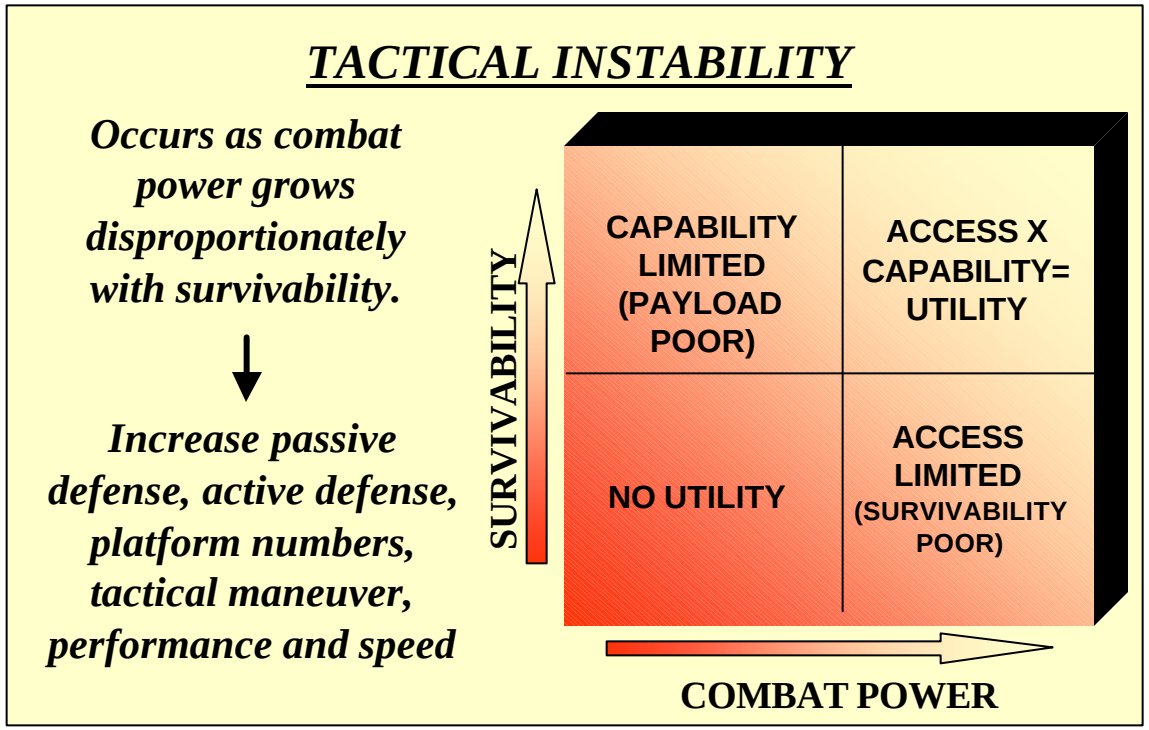
Information Advantage – Create *new source of power* with order of magnitude improvements in information sharing (Common Relevant Operational Picture)



Competitive Advantage

… New sources of power

Physical Advantage – Gaining Advantage in force, space and time (physical expression of the impact of the information-age)



Competitive Advantage

… New sources of power

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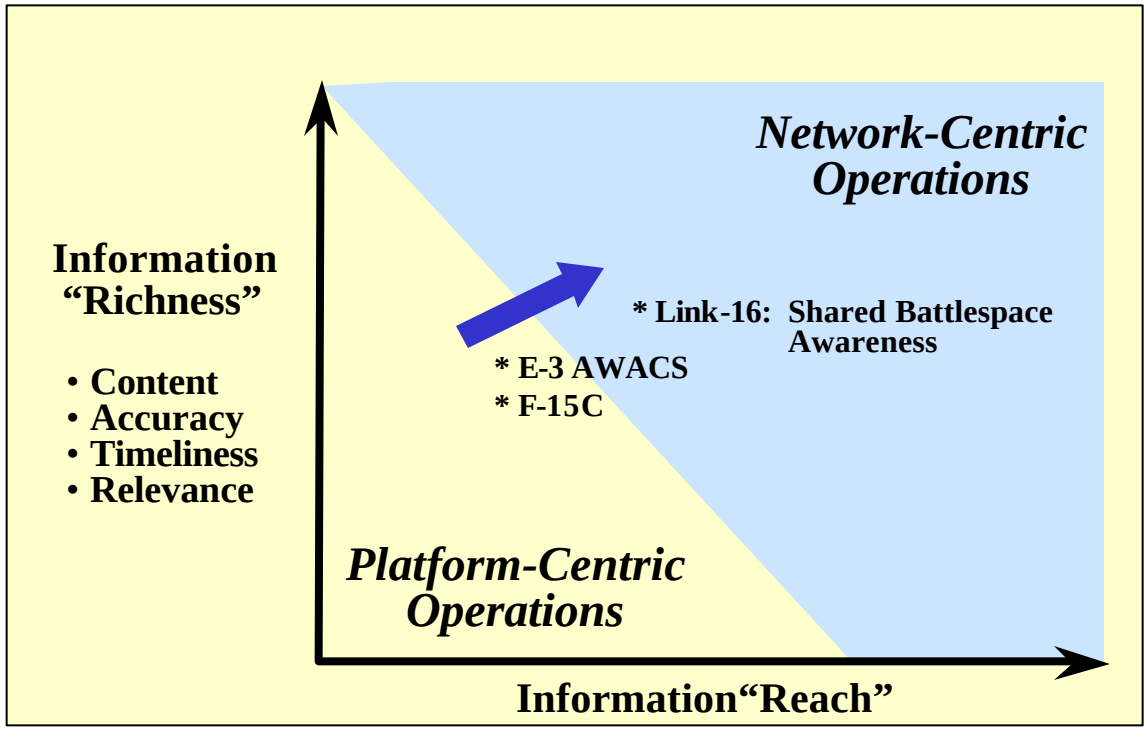
Decision (Cognitive) Advantage – Self-synchronization, collaboration, coordination, precision of desired effects, "lock-out" to deny adversary the opportunity to compete, speeding up the "kill chain" to strike time-critical targets,enabling new TTP



Competitive Advantage

…New sources of power

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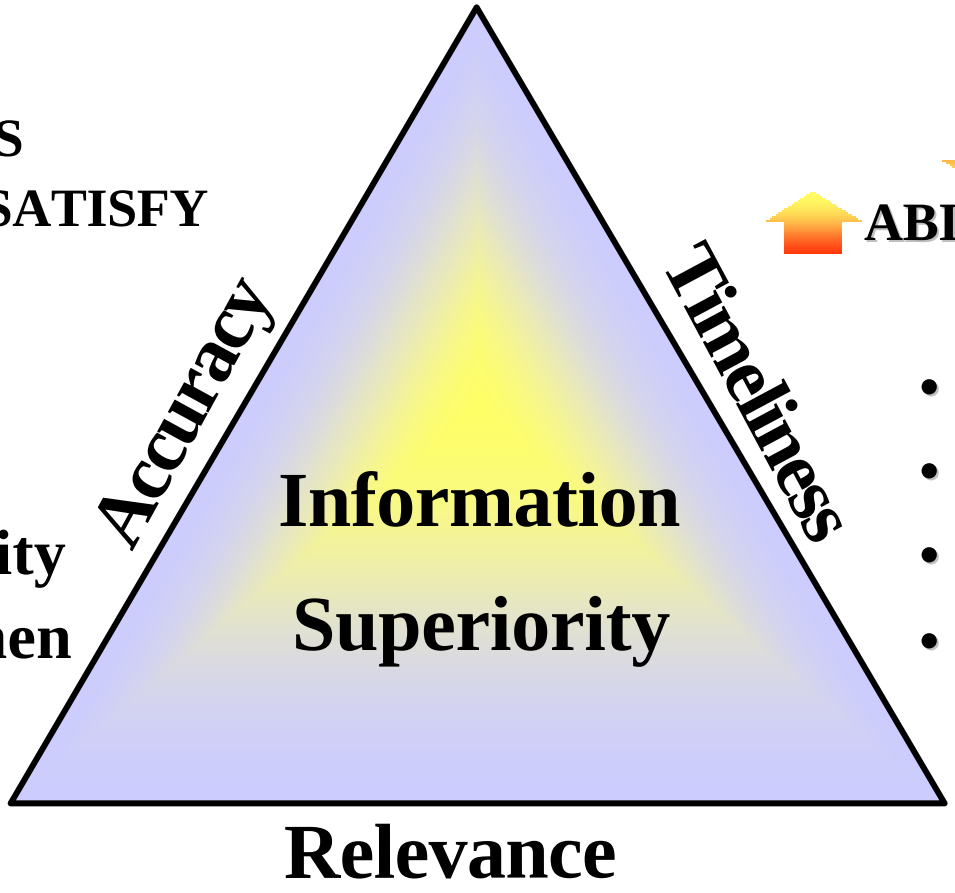
THEIRS

NEEDS

ABILITY TO SATISFY

- Increase
- Deny
- Add Complexity
- Centralize - then Fragment



OURS

NEEDS

ABILITY TO SATISFY

- Decrease
- Satisfy
- Simplify
- Decentralize and Converge

"We need a force which is designed and capable of fighting first for information superiority."

Transforming Defense

…2nd derivative force

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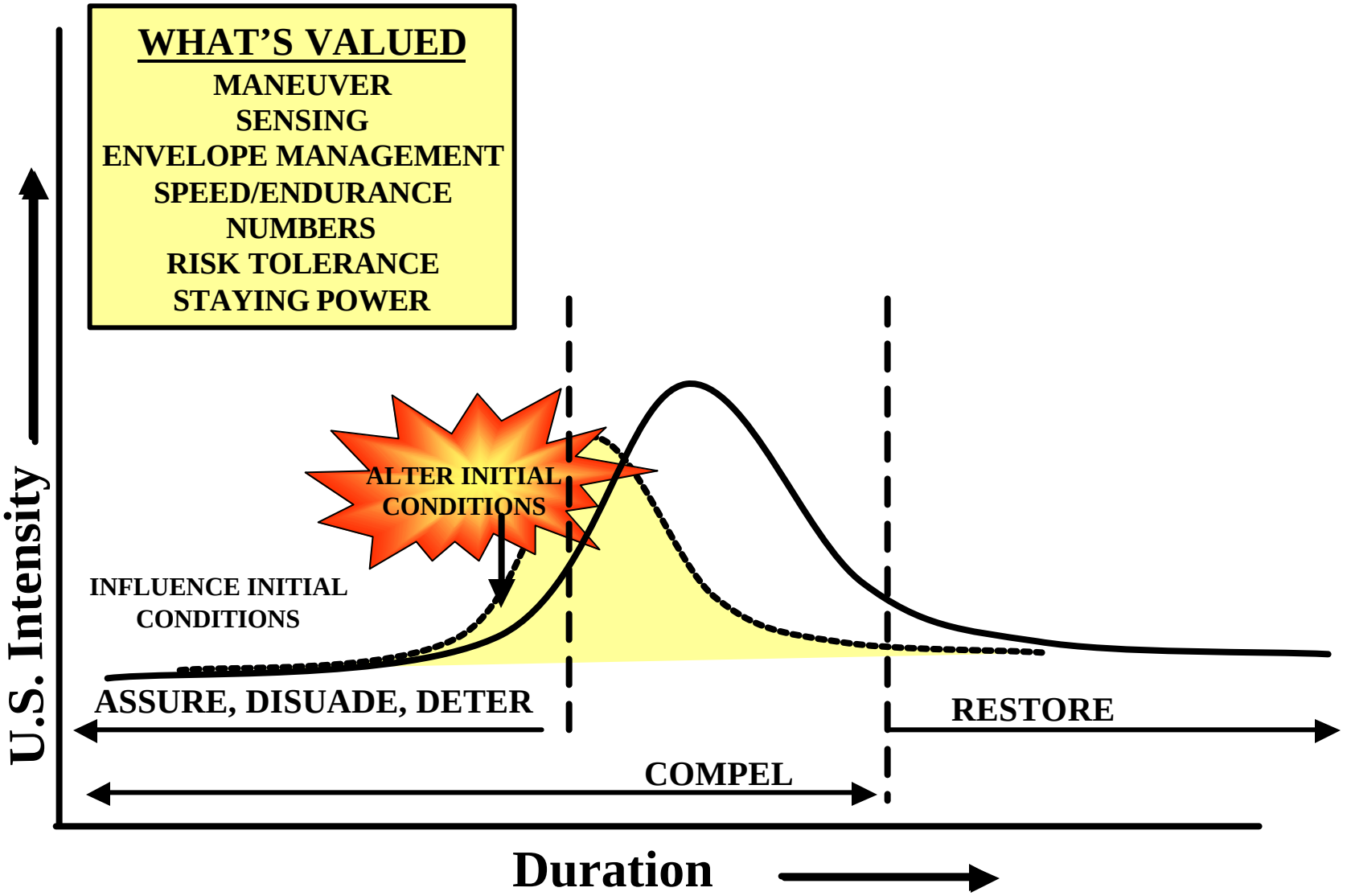

The Power of Transformation

…what we saw

- **NCW implementation**
- **The power of shared awareness**
  - *ISR*
  - *High speed networking*
  - *New capabilities / TTPs*
  - *The non-contiguous battlespace*
- **Networking + ISR =**
  - *Speed*
- **Information running ahead of the physics**
- **A new Airpower – Land power intersection**
  - *All weather weapons / CAS / Interdiction*
  - *Speed*
  - *Weight of Fire vs Precision*
- **Movement toward tactical level jointness / interoperability**
  - *Especially SOF*

Speed Creates the Appearance of an Incompetent Opponent

ISR + Speed + Lethality => Bad Options for the Enemy

A New "Sweet Spot"

Parallel Challenges in Commercial Sector

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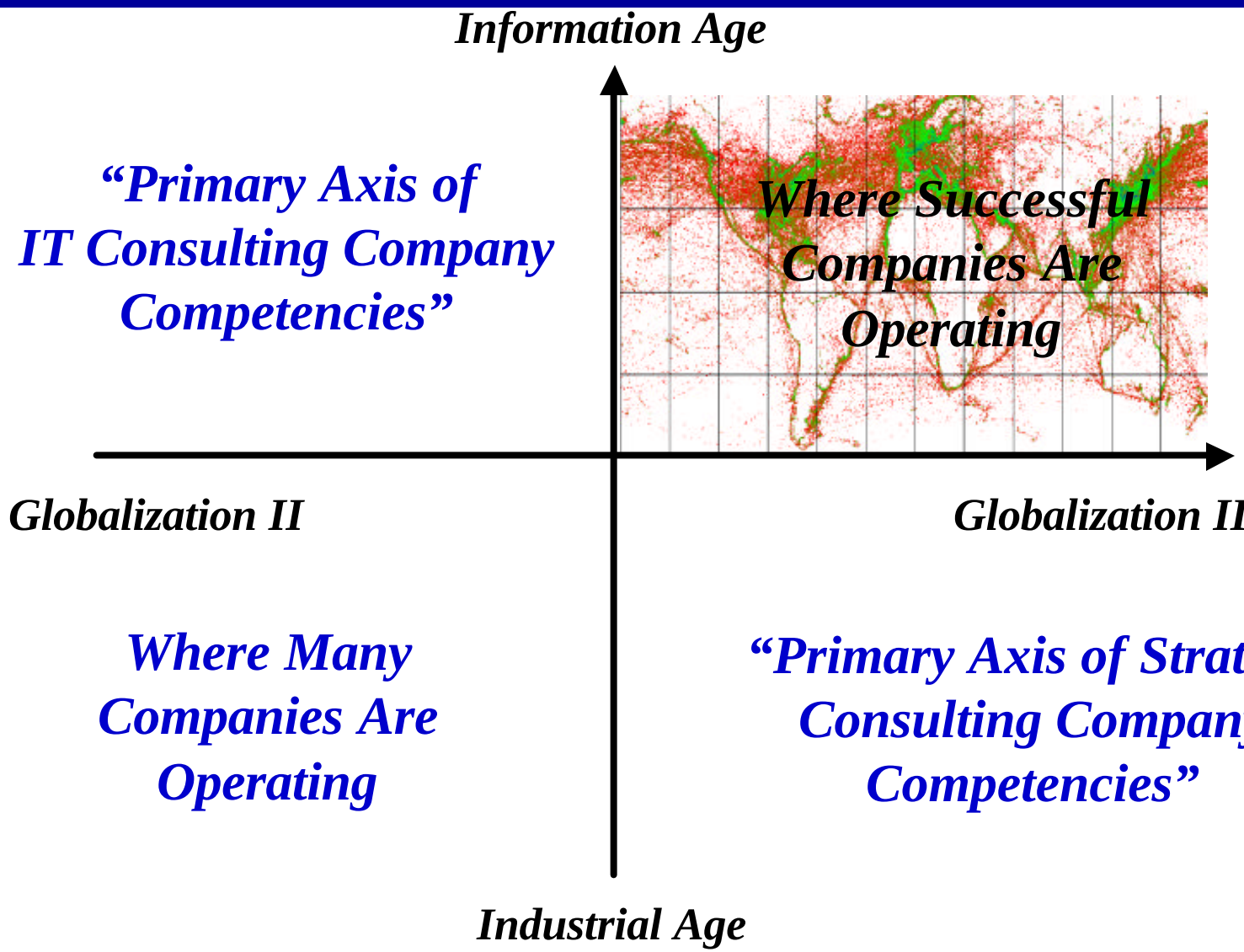
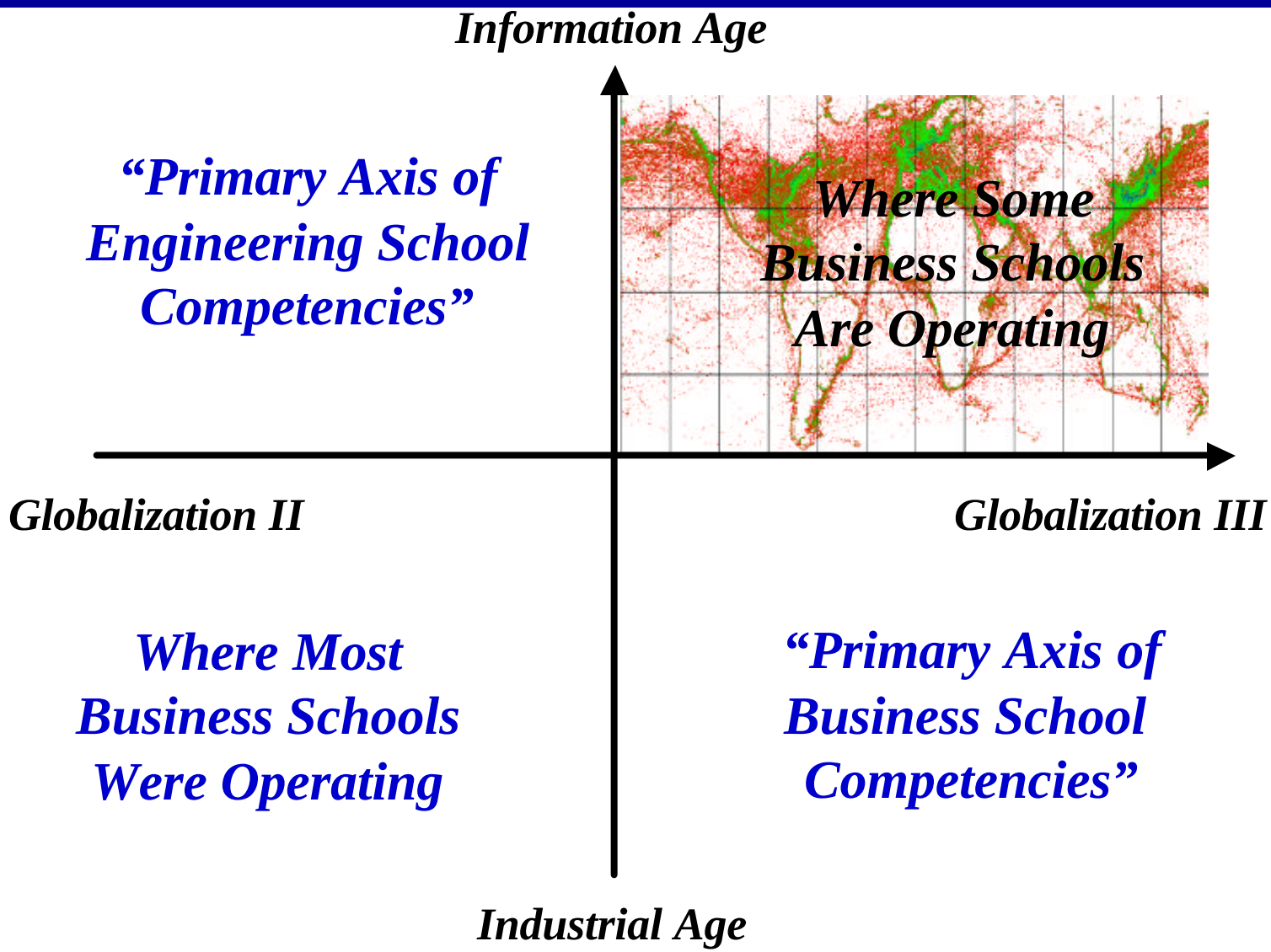


Parallel Challenges in Commercial Sector

Office of Force Transformation



Education and Transformation

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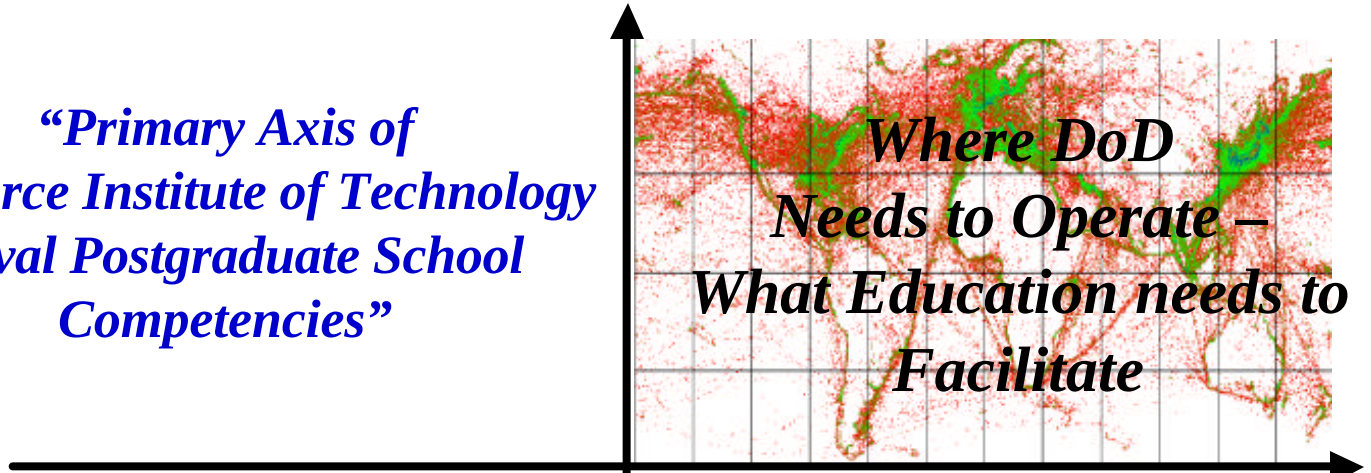

Information Age

"Primary Axis of Air Force Institute of Technology Naval Postgraduate School Competencies"

Globalization II

Globalization III

Current Focus of PME

"Primary Axis of War College Competencies"

?

Industrial Age

Training and Transformation

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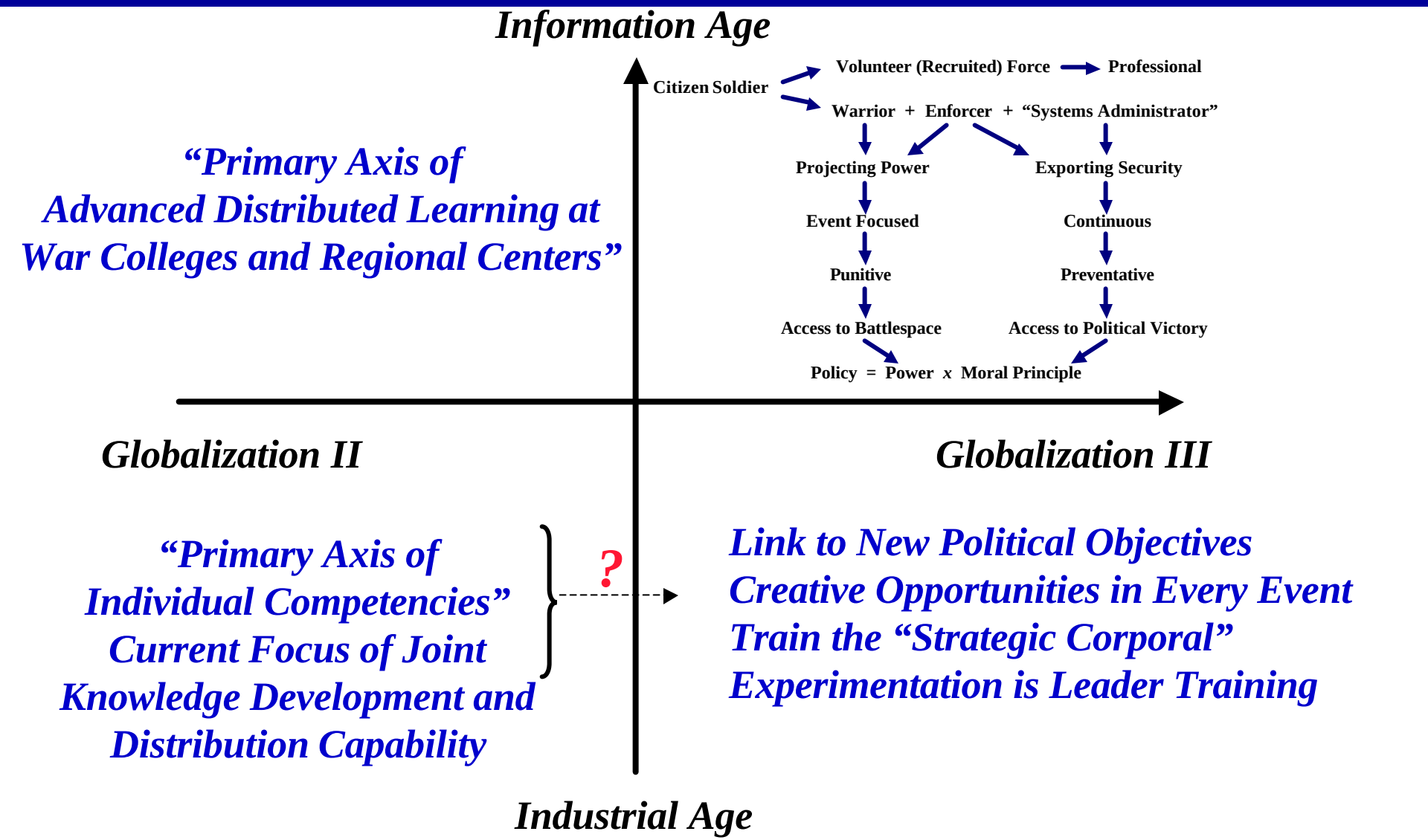
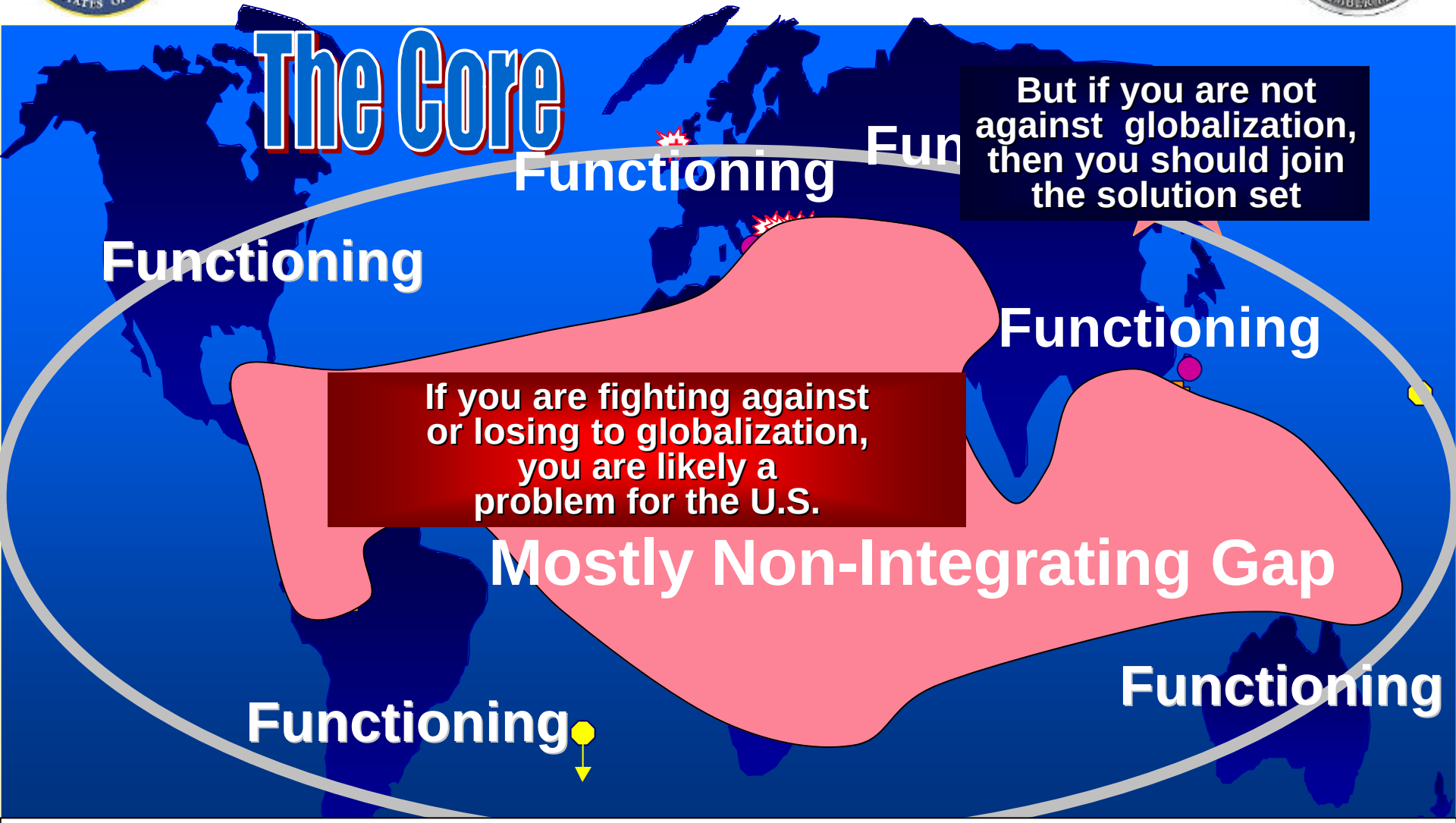


On 9/11, A Map Redrawn



U.S. Military Responses to Situations, 1990-2002

Evac's | Peace/ Relief | Contingency Positioning | Show of Force | Combat